

**Phase 2**  
**Remedial Investigation**  
for  
**Site 2- Fire Training Area**

**Naval Weapons**  
**Industrial Reserve Plant**  
Calverton, New York



**Northern Division**  
**Naval Facilities Engineering Command**  
**Contract Number N62472-90-D-1298**  
**Contract Task Order 0270**

February 2001



**TETRA TECH NUS, INC.**

**PHASE 2 REMEDIAL INVESTIGATION  
FOR  
SITE ~~1~~<sup>2</sup> - FIRE TRAINING AREA  
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT  
CALVERTON, NEW YORK**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
Northern Division  
Environmental Branch Code 18  
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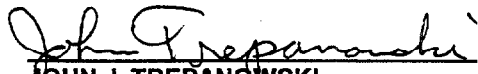
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## ACRONYMS AND ABBREVIATIONS

AFFF	aqueous fire fighting foam
AS/SVE	air sparging/soil vapor extraction
ARAR	applicable or relevant and appropriate requirement
BTU	British Thermal Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action Navy
CMS	Corrective Measures Study
CSF	Cancer Slope Factor
CTO	Contract Task Order
DO	dissolved oxygen
DOH	Department of Health
EE/CA	Engineering Evaluation and Cost Analysis
EPA	U.S. Environmental Protection Agency
EVS	Environmental Visualization System
FS	Feasibility Study
ft/min	feet per minute
GC	gas chromatography
GOCO	Government-Owned Contractor-Operated
HI	hazard index
HNUS	Halliburton NUS Corporation
HQ	hazard quotient
IAS	Initial Assessment Study
ICR	incremental cancer risk
IEUBK	Integrated Exposure Uptake Biokinetic
IR	Installation Restoration
KOC	organic carbon partition coefficient
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
MPC	Marine Pollution Control
msl	mean sea level
NAVFAC	Naval Facilities Engineering Command
NTU	nephelometric turbidity unit
NWIRP	Naval Weapons Industrial Reserve Plant
NYSDEC	New York State Department of Environmental Conservation
PA	Preliminary Assessment

PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
POL	petroleum, oil, and lubricant
QA	quality assurance
QC	quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SI	Site Investigation
SOP	Standard Operating Procedure
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAGM	Technical and Administrative Guidance Memorandum
TBC	to be considered
TCL	Target Compound List
TtNUS	Tetra Tech NUS, Inc.
USDOl	U.S. Department of the Interior
VOC	volatile organic compound
µg/kg	microgram per kilogram
µg/L	microgram per liter

## EXECUTIVE SUMMARY

This Phase 2 Remedial Investigation (RI) report has been prepared for the Department of the Navy, Northern Division Naval Facilities Engineering Command by Tetra Tech NUS, Inc. (TtNUS), under Contract Task Order (CTO) 0270. This report summarizes the results of the Phase 2 RI for Site 2 – Fire Training Area at the Naval Weapons Industrial Reserve Plant (NWIRP) located in Calverton, New York. The purpose of the RI is to characterize the nature and extent of contamination and estimate potential risks to human health and the environment. This Phase 2 RI report serves as a supplement report to the Resource Conservation and Recovery Act (RCRA) Facility Investigation Report (RFI) and Addendum for NWIRP Calverton, New York (Halliburton NUS Corporation [HNUS], 1995a; HNUS, 1995b). Phase 2 RI activities were conducted to fill data gaps from the previous investigations.

The NWIRP Calverton facility is both a state Superfund site and a RCRA site. This report encompasses both state Superfund (RI) and RCRA (RFI) requirements.

### SITE DESCRIPTION

Site 2 is located on the eastern side of a 9-acre clearing in the south-central portion of NWIRP Calverton. A circular, concrete pit in the southeast corner of the clearing was used to contain liquids for fire training exercises. The pit is approximately 50 feet in diameter. A 1,000-gallon steel aboveground storage tank located approximately 75 feet north of the training area was used to store fuel. This tank was removed in 1996. A 6,000-gallon underground fuel storage tank was located north of the training area before 1982. The eastern portion of the fire training area was partially excavated at an unknown time. A small embankment up to 4 feet high is located along the eastern edge of the area, and a dirt access road is located along the southern edge. Vegetation covers the majority of the area within the clearing west of the concrete pit. The fire training area is surrounded by woodlands.

Before 1982, activities at the site consisted of clearing an area up to 100 feet or more in diameter and creating an earthen berm to surround the area. The bermed area was filled with a layer of water. Waste fuels, oils, and solvents were floated on the water and ignited. Aircraft sections were sometimes placed in the area to simulate crash conditions. After 1975, waste solvents were reportedly no longer mixed with the waste fuel and oil. The curbed, concrete pit was constructed in 1982, and the use of earthen berms was discontinued. Fire fighting materials included aqueous fire fighting foam, gaseous Halon 1301, water, and dry chemical extinguishers.

To date, remedial activities consisted of spill cleanup, removal of storage tanks and contaminated soil, installation of a free product removal, and installation of a pilot-scale air sparging/soil vapor extraction

(AS/SVE) system. A spill of unknown volume originated from the 6,000-gallon storage tank in August 1982. Approximately 327 cubic yards of contaminated soil were removed from the tank and spill area, monitoring wells were installed, the concrete pit was constructed, and the 1,000-gallon tank was installed.

In 1983, approximately 300 gallons of waste oil leaked from the pipeline leading from the 1,000-gallon tank. Additional monitoring wells were installed to track potential contamination from the spills.

A groundwater recovery system was installed in December 1987. This system consisted both of an active and a passive recovery system. The active recovery system included a groundwater pumping well, an oil recovery well, and an oil water separator tank. The passive recovery system consisted of hydrophobic filters located in shallow wells. The active recovery system was shut down in 1993. Passive free product recovery continued until 1996. As of December 1996, approximately 325 gallons of petroleum product have been removed from this site. In 2000, a passive recovery system, using adsorbent media, was initiated.

A pilot-scale AS/SVE system was installed in 1995. As of 2000, approximately 80 pounds of volatile organic compounds (VOCs) had been removed. In addition, an estimated 30,000 pounds of organics have been destroyed through biodegradation. VOC concentrations in soil and groundwater have been reduced by 70 to 95 percent.

## **PREVIOUS INVESTIGATIONS**

An RFI was conducted in 1994 and 1995 to determine the nature and extent of contamination. VOCs, including chlorinated solvents and fuel-related contaminants, were detected at relatively high concentrations in soil. The fire training pit is the most likely primary source area. Other relatively minor source areas were (or are) present at the site including areas west and north of the fire training pit. Polychlorinated biphenyls (PCBs), pesticides, polynuclear aromatic hydrocarbons (PAHs), and phthalates were detected in several soil samples. The metals antimony, lead, and selenium were detected in soil at concentrations greater than background levels. The extent of soil contamination was adequately defined during the RFI. The estimated volume of contaminated soil is 25,000 cubic yards. This volume has been significantly reduced since the operation of the AS/SVE system.

Groundwater testing during the RFI in 1994 and 1995 detected VOCs, including chlorinated solvents and fuel-related compounds, at concentrations above federal and state drinking water and groundwater quality standards. PCBs, PAHs, and lead were also detected at concentrations above these standards. The area of the VOC detections was addressed by the pilot-scale AS/SVE system. The location of the free product corresponds to the location of the most contaminated groundwater. The horizontal and

vertical extent of groundwater contamination was adequately characterized during the RFI, except to the south (off site) and east.

## **SITE RISKS**

The human health risk assessment was conducted for the 1995 RFI report. The risk assessment found that there might be an unacceptable cancer risk to current workers. PCBs in the surface soil resulted in the most significant potential cancer risk ( $4.5E-05$ ). However, this risk is within the EPA target risk range of  $1E-04$  to  $1E-06$ . Residential exposure to soil and groundwater was also evaluated. Carcinogenic and noncarcinogenic risks exceeded the target risk range for both media. The primary risk drivers include solvents, PAHs, PCBs, arsenic, and manganese.

In addition to the potential for unacceptable risks to human health, the concentrations of several soil and groundwater contaminants exceeded state guidance or regulatory requirements. Soil contaminants detected at concentrations higher than state guidance include chlorinated and nonchlorinated VOCs, PAHs, PCBs, and several metals. Most of the exceedances are located at one location. Groundwater contaminants detected at concentrations higher than drinking water standards and groundwater quality standards included a variety of chlorinated and nonchlorinated solvents, dichlorobenzene, phenolics, PAHs, pesticides, PCBs, and metals.

## **PHASE 2 RI**

The following Phase 2 field investigations activities were conducted in 1997 to fill data gaps for Site 2:

- Four on-site and four off-site temporary monitoring wells were installed. Groundwater samples were collected from various depths at each location and analyzed for VOCs.
- One shallow depth and one intermediate depth permanent monitoring wells were installed.
- Two rounds of groundwater samples were collected from permanent monitoring wells and analyzed for VOCs.

The results of the sampling indicate that the nature and extent of groundwater contamination has been defined, and there are no remaining data gaps.

## **CONCLUSIONS**

The following conclusions were developed based on the results of the RFI and Phase 2 RI:

- The extent of groundwater contamination at Site 2 is now adequately defined. Based on available data, the groundwater contamination is near the downgradient fence line.
- The groundwater contamination at Site 2 is not continuous. Several areas and pockets of discrete contamination are present.
- Enough data now exists to proceed to a Feasibility Study to evaluate remedial options that will address soil and groundwater contamination.

## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

The Northern Division of the Naval Facilities Engineering Command (NAVFAC) has issued Contract Task Order (CTO) 0270 to Tetra Tech NUS, Inc. (TtNUS) under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract N62472-90-D-1298 to perform a Phase 2 Remedial Investigation (RI) for Site 2 – Fire Training Area at the Naval Weapons Industrial Reserve Plant (NWIRP), located in Calverton, New York.

This work is part of the Navy's Installation Restoration (IR) Program, which is designed to identify contamination of Navy and Marine Corps lands/facilities resulting from past operations and to institute corrective measures, as needed. There are typically four distinct stages. Stage 1 is the Preliminary Assessment (PA), which was formerly known as the Initial Assessment Study (IAS). Stage 2 is a Resource Conservation and Recovery Act (RCRA) Facility Assessment-Sampling Visit (RFA), also referred to as a Site Investigation (SI), which augments the information collected in the PA. Stage 3 is the RFI/Corrective Measures Study (CMS), also referred to as a Remedial Investigation/Feasibility Study (RI/FS), which characterizes the contamination at a facility and develops options for remediation of the site. Stage 4 is the Corrective Action, also referred to as the Remedial Action, which results in the control or cleanup of contamination at sites. This report has been prepared under Stage 3 and serves as a supplemental report to the RFI Report and Addendum for NWIRP Calverton, New York (Halliburton NUS Corporation [HNUS], 1995a; HNUS, 1995b).

This report specifically addresses Site 2, the Fire Training Area. Based on test results presented in this and previous reports (See Section 1.7), the nature and extent of contamination at this site have been adequately characterized. Therefore, the remediation process can proceed to the FS step. Additional data collection would be conducted during the FS and Remedial Action stages, as required.

In addition to Site 2, Phase 2 RI testing is continuing at several other IR sites. The results from the investigations at the other sites will be presented in separate Phase 2 RI reports.

This Phase 2 RI, which is analogous to a Phase 2 RFI, was conducted in accordance with the requirements of the New York State Department of Environmental Conservation (NYSDEC) Division of Solid & Hazardous Materials Part 373 Permit that was issued to the Navy on April 18, 2000 under their implementing regulations (6 NYCRR Part 621). This permit supercedes and replaces the original Part 373 Permit to Operate a Hazardous Waste Storage Facility that was issued to then Grumman Aerospace Corporation on March 25, 1992. The new permit, issued only to the Department of Navy, deals

exclusively with those Solid Waste Management Units (SWMUs) that remain on the former NWIRP Calverton property and any Corrective Actions that may be required in order to adequately address each IR site. Although the Part 373 Permit is the enforceable document governing the Navy's remedial actions, the NYSDEC State Superfund group, located out of the Albany office, retains primary responsibility for regulatory oversight of the Navy's actions. As such, the Navy has agreed to a request made by the NYSDEC State Superfund group to utilize terminology associated with the NYSDEC State Superfund program which is closely related to the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) program. The CERCLA terminology that is to be used parallels the RCRA terminology, and the implementation phases of each have been determined to meet the substantive requirements of both programs and will also satisfy the Corrective Action requirements set forth in Module III of the Part 373 Permit.

The area is listed as Classification 2 in the NYSDEC Registry of Inactive Waste Disposal Sites.

## **1.2 FACILITY LOCATION**

The site involved in this study is located within the confines of NWIRP Calverton, Suffolk County, New York (see Figure 1-1 and Figure 1-2). NWIRP Calverton is located on Long Island approximately 70 miles east of New York City. The facility is located within the municipality of Riverhead.

Prior to 1996, NWIRP Calverton was a government-owned contractor-operated (GOCO) facility that was operated by the Northrop Grumman Corporation. The facility had an overall area of approximately 6,000 acres, of which 3,000 acres lie entirely within a fenced-in boundary. The majority of the industrial activity was confined to the south central portion of this fenced-in area.

Currently, NWIRP Calverton consists of four separate parcels of land totaling approximately 358 acres. Eight Navy IR sites are included within these parcels as follows. The location of the parcels and sites are presented in Figure 1-2.

### Parcel A (32 acres)

Site 2 - Fire Training Area

### Parcel B1 (40 acres)

Site 6A - Fuel Calibration Area

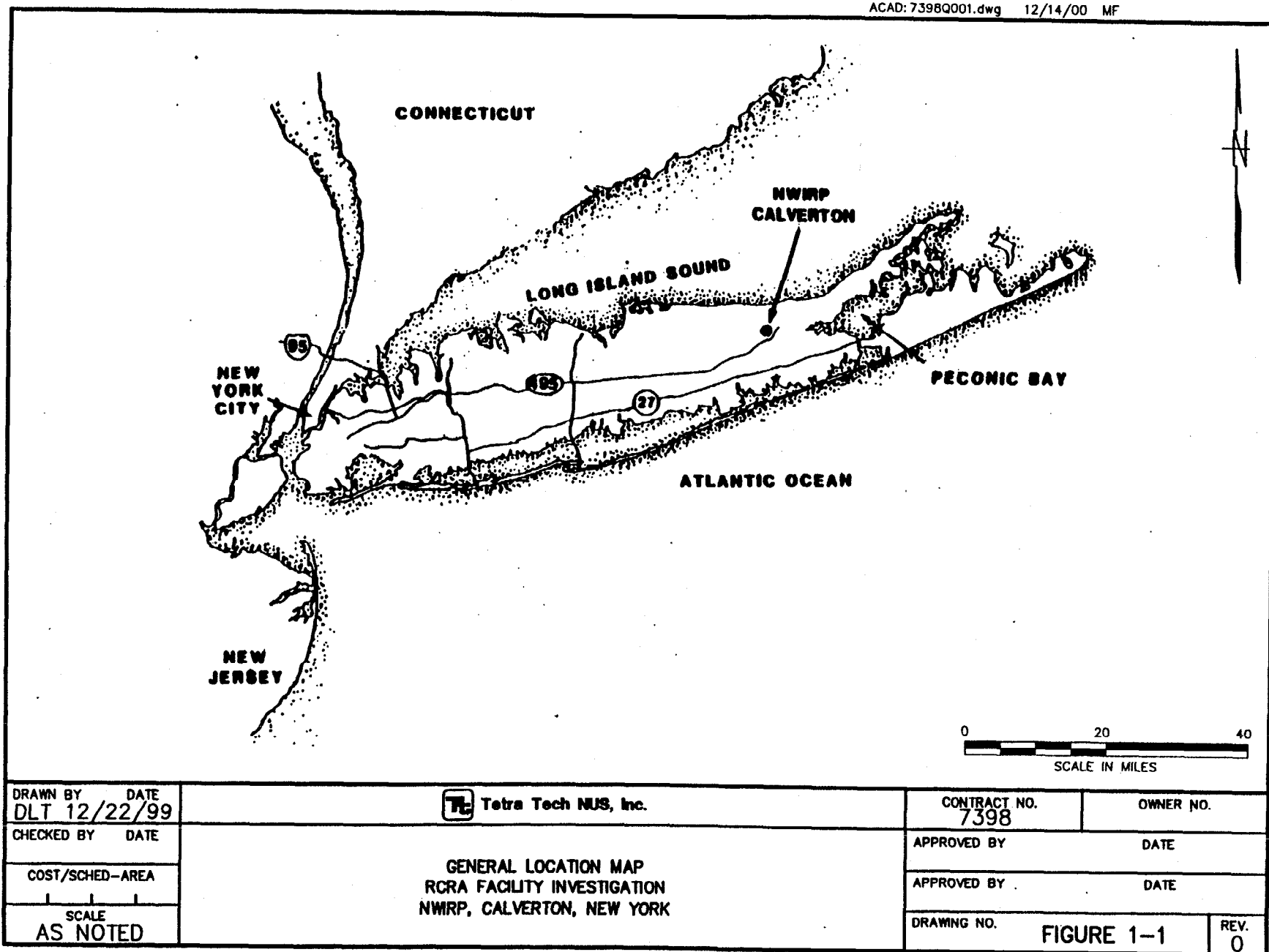
Site 10B - Engine Test House

### Parcel B2 (131 acres)

Southern Area

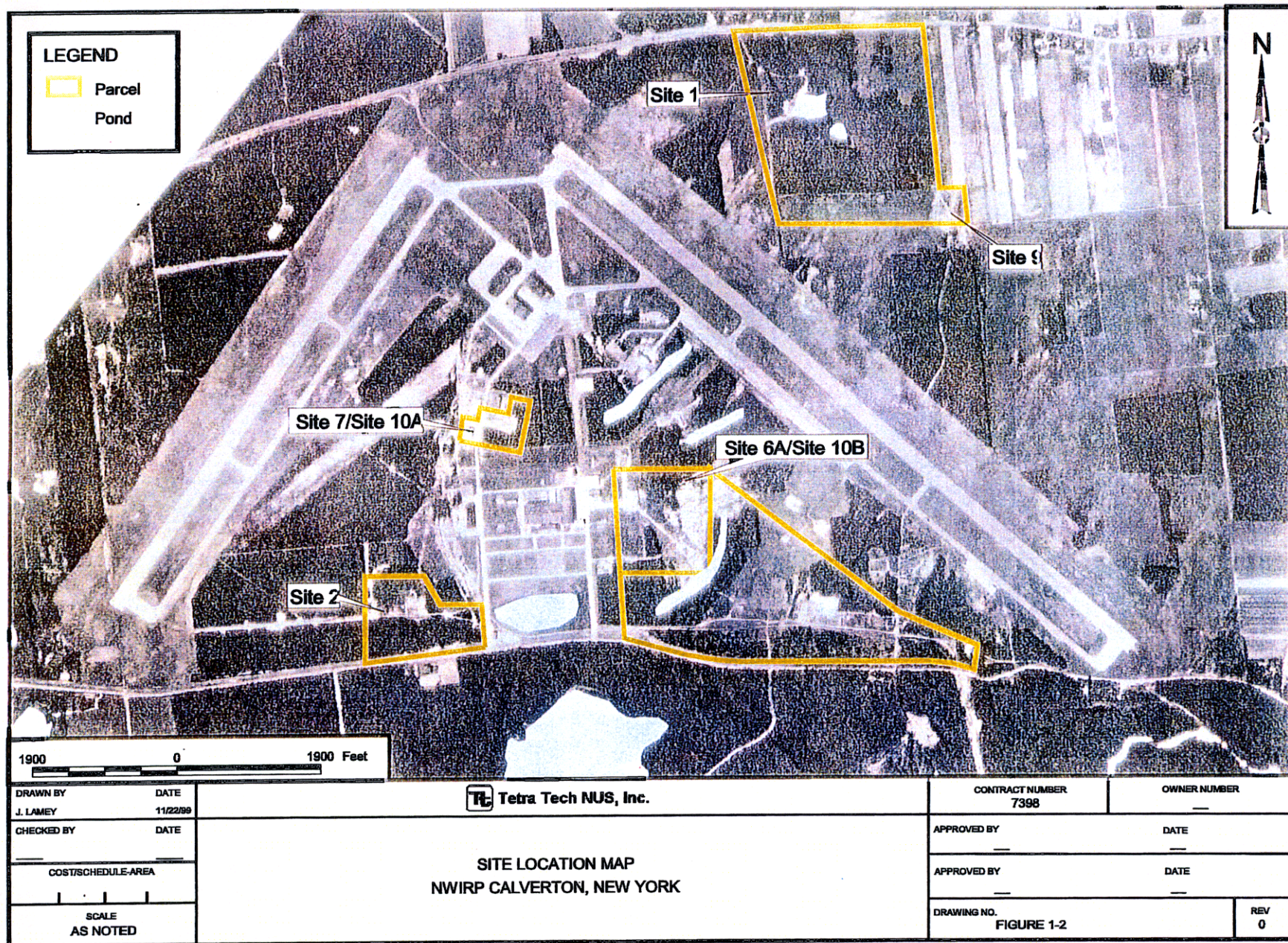


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Parcel C (10 acres)

Site 7 - Fuel Depot

Site 10A - Jet Fuel Systems Laboratory

Parcel D (145 acres)

Site 1- Northeast Pond Disposal Area

Site 9 - ECM Area

### **1.3 FACILITY HISTORY**

NWIRP Calverton has been owned by the U.S. Department of the Navy (Navy) since the early 1950s, at which time the land was purchased from a number of private owners. The facility was expanded in 1958 through additional purchases of privately owned land. Northrop Grumman Corporation (previously Grumman Corporation) leased the land and was the sole operator of the facility from its construction until February 1996. In 1996, the land was returned to the Navy.

In September 1998, the majority of the land within the developed section of the facility was transferred to the Town of Riverhead for redevelopment. Because of the need for additional environmental investigation and the potential need for remediation, the Navy retained four parcels of land within the developed section. The four parcels and associated Navy IR Sites are presented on Figure 1-2.

In September 1999, 2,935 acres of undeveloped land outside the fenced areas was transferred to NYSDEC who will continue to manage the property for resource conservation and recreational uses. An additional 140 acres of the northwest buffer zone was transferred to the Department of Veterans Affairs and will be used for expansion of the Calverton National Cemetery.

NWIRP Calverton was constructed in the early 1950s for use in the development, assembly, testing, refitting, and retrofitting of naval combat aircraft. The facility supported aircraft design and production at the Northrop Grumman's Bethpage facility, which is located in Nassau County, New York.

The majority of industrial activity at the facility was confined to the developed area in the center and south center of the facility between the two runways. Industrial activities at the facility were related to the manufacturing and assembly of aircraft and aircraft components. Operations which resulted in hazardous waste generation included but were not limited to metal finishing processes, such as metal cleaning and electroplating, other maintenance operations, temporary storage of hazardous waste, fueling operations, and various training operations. The painting of aircraft and components resulted in additional waste generation.

## **1.4 SURFACE WATER HYDROLOGY**

The majority of the NWIRP Calverton is located within the Peconic River drainage basin. The eastward-flowing Peconic River is located approximately 1,300 feet south of the facility at its closest point. The Peconic River discharges to Peconic Bay located 8.5 stream miles from the facility.

Surface water hydrology is illustrated on Figure 1-3. Major surface water features near the facility include McKay Lake and Northeast Pond (see Figure 1-2). McKay Lake is a man-made groundwater recharge basin located north of River Road, midway along the southern site border. Northeast Pond is located at the northeast corner of the facility. Several small drainage basins exist near the Fuel Calibration Area (Runway Ponds). All of these surface water features are land locked, with the exception of McKay Lake, which has an intermittent discharge to Swan Pond, located 1,500 feet to the south of NWIRP Calverton. Overland flow from the drainage basins to the Peconic River may also occur periodically.

A number of small wetlands exist on the Calverton facility. The U.S. Department of the Interior (USDOI), Fish and Wildlife Department classifies the western half of the 2-acre Northeast Pond as palustrine, forested/scrub/shrub/emergent wetland. The drainage basins are classified as palustrine, scrub/shrub/emergent wetland (USDO, 1980).

## **1.5 PREVIOUS INVESTIGATIONS**

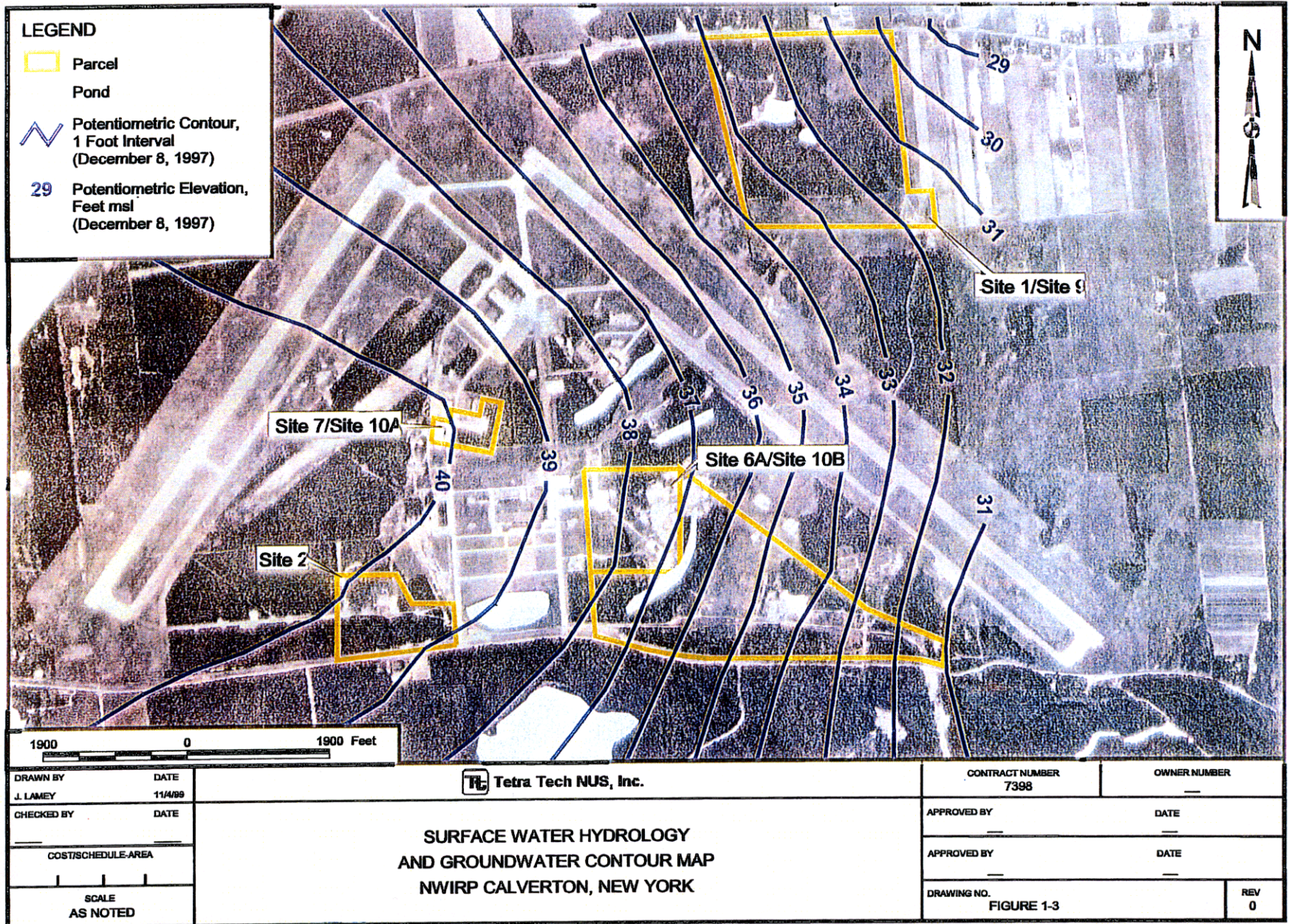
Previous investigations at the site consisted of the following:

- IAS (Navy, 1986)
- SI (HNUS, 1992a)
- Hazard Ranking System Preliminary Scoring and Site Inspection Report Form (HNUS, 1992b)
- RFI (HNUS, 1995a)
- RFI Addendum (HNUS, 1995b)

This report has been prepared as an addendum to the NWIRP Calverton RFI reports issued in 1995, (HNUS, 1995a; HNUS, 1995b). The RFI reports concluded that additional testing was necessary to confirm nature and extent of contamination at several sites, including Site 2 - Fire Training Area.

The Phase 2 RI testing program was presented in the Phase 2 RCRA Facility Investigation Field Sampling Plan (C.F. Braun, 1997) and incorporates comments from the NYSDEC, New York State Department of Health (DOH), The Nature Conservancy, Suffolk County Department of Health Services, and EPA.





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## 1.6 SUMMARY OF FIELD ACTIVITIES

Field activities conducted during the Phase 2 RI are summarized as follows. A detailed description of field activities is presented in Section 3.0 of this report.

- Temporary monitoring well installation with groundwater sampling and analysis for volatile organic compounds (VOCs).
- Permanent monitoring well installation.
- Groundwater sampling with VOC analysis.

## 1.7 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) SAMPLES

Environmental samples were analyzed by Volumetric (48-hour turnaround time; groundwater only for limited VOCs) and Quanterra, Inc. (28-day turnaround; groundwater for Target Compound List [TCL] VOCs). Analytical results, analytical methods, and data qualifiers are presented in Appendix A.

The Volumetric data were evaluated based upon trip blank contamination. The findings of the site-wide evaluation are presented below. Because of the limited number of field QA/QC samples and because the analytical method used was gas chromatography (GC), the data are considered usable only for screening purposes. The following VOCs were detected in trip blanks at the concentrations indicated:

COC No.	Compound	Concentration (µg/L)	Action Level (µg/L)	Samples Affected
12	1,1-Dichloroethane	2.6	13	None
13	1,1-Dichloroethane	0.74	3.7	None
18	Benzene	0.54	2.7	None
18	Toluene	1.42	14.2	None
18	Ethylbenzene	0.53	2.65	JF-GW 16-20 JF-GW 16-35
19	Chloroform	0.72	3.6	JF-DUP-08

### NOTE:

JF designations indicate samples collected at the Jet Fuel System Laboratory. The results of this investigation will be detailed in a subsequent RI report but will be used in this report as relevant.

The results of this evaluation did not find significant evidence of blank contamination with Volumetric test results for Site 2. On a facility-wide basis, several chemicals were detected in the trip blanks. However, 1,1-dichloroethane, benzene, and toluene were not detected in the samples associated with these trip blanks. Positive results reported for ethylbenzene and chloroform in the samples shown above are at

concentrations below the action levels and are considered false positives. Therefore, positive results for these compounds in the affected samples were struck out and qualified as artifacts of contamination, "B".

A more detailed evaluation of the data from Quanterra was conducted. Associated with these sample results are more extensive field QA/QC samples and detailed documentation of laboratory procedures. This data evaluation addresses only samples collected at Site 2 during the Phase 2 RI. Data evaluation included a review of laboratory and field QC blanks and field duplicate results.

Evaluation of laboratory and field QC blanks was performed to aid in the elimination of false positive results identified as laboratory or field artifacts. Acetone was detected in a field ambient blank (labeled as a "field poured trip blank" on the chain-of-custody). However, acetone was not detected in any of the associated field samples. No other TCL VOCs were detected in any of the laboratory or field QC blanks associated with Site 2.

Field duplicate samples were collected for groundwater samples for Site 2. Field duplicate precision was evaluated by determining the relative percent difference (RPD) between field duplicate results. The criterion used for evaluation was a limit of 30 percent. None of the field duplicate results for Site 2 exceeded this criterion.



## **2.0 SITE BACKGROUND**

### **2.1 SITE DESCRIPTION AND PHYSICAL SETTING**

Site 2 – Fire Training Area is located on the eastern side of a 9-acre clearing in the south-central area of the NWIRP Calverton facility and is shown on Figure 2-1. A circular, concrete pit in the southeast corner of the clearing was used to contain liquids for fire training exercises. The pit is approximately 50 feet in diameter and is located approximately 750 feet north and 1,000 feet west of the facility south gate. A 1,000-gallon, steel, aboveground storage tank located approximately 75 feet north of the training pit was used to store fuel. This tank was removed in 1996. A 6,000-gallon underground fuel storage tank was located north of the training area before 1982 (Navy, 1986.)

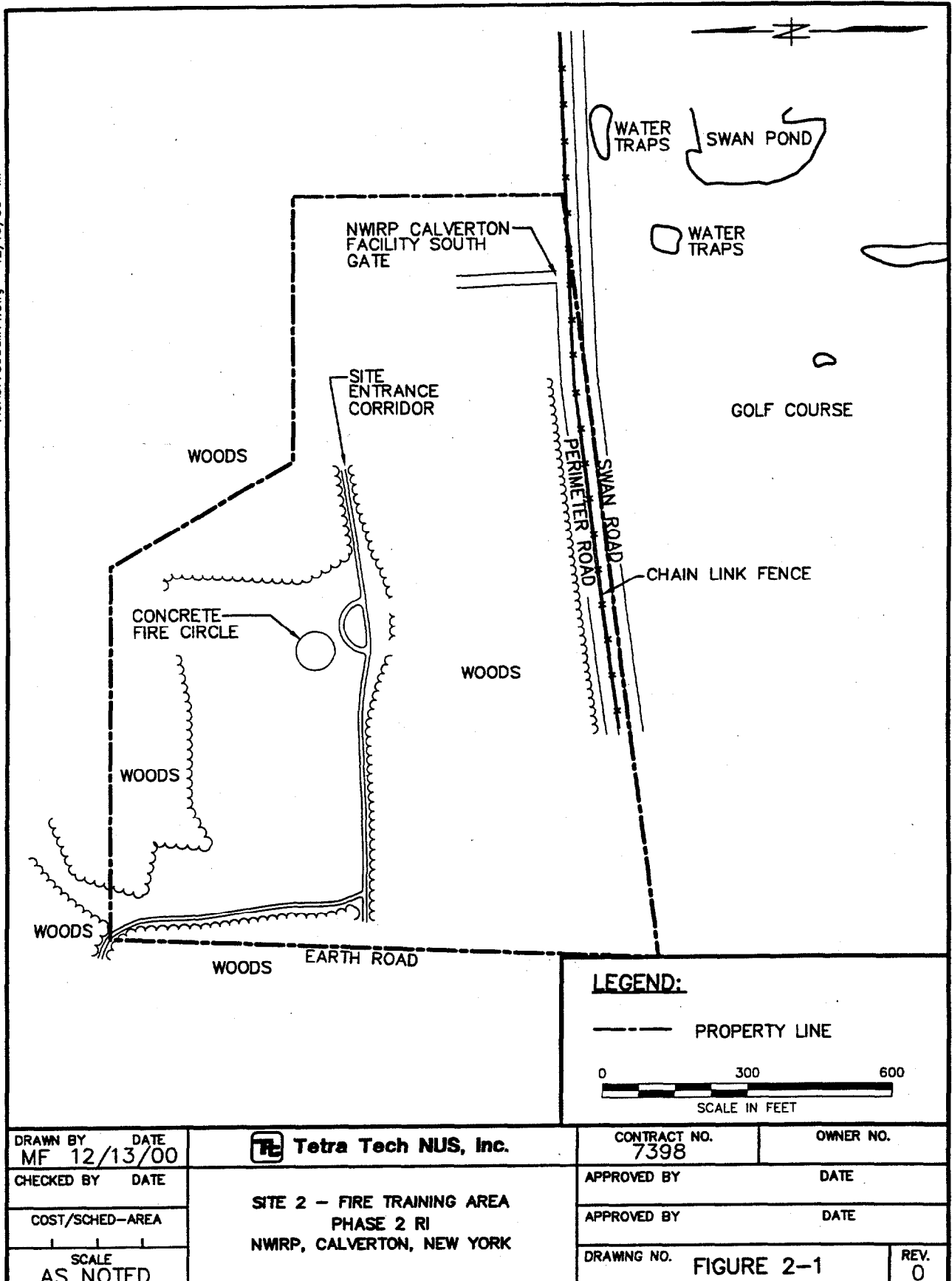
The eastern portion of the fire training area was partially excavated at an unknown time. A small embankment up to 4 feet high is located along the eastern edge of the area, and a dirt access road is located along the southern edge. The fire training area is surrounded by woodlands. The majority of the area within the clearing to the west of the concrete pit is covered by marsh-type vegetation, although there is no evidence of standing water. The water table is approximately 10 to 15 feet below ground surface.

### **2.2 SITE HISTORY**

The Site 2 area had been used by Northrop Grumman and Navy crash rescue teams as a training area since 1955 and possibly as early as 1952. According to the IAS, soil disturbances in the area were continuously evident in historical photographs. Before 1982, activities at the site consisted of clearing an area up to 100 feet or more in diameter and creating an earthen berm to surround the area. The bermed area was filled with a layer of water. Waste fuels, oils, and solvents were floated on the water and ignited. The IAS reports that up to 450 gallons of waste solvent were mixed with up to 2,100 gallons of waste fuel per year for use in the training exercises. Aircraft sections were sometimes placed in the area to simulate actual crash conditions. After 1975, waste solvents were reportedly no longer mixed with the waste fuel and oil. In 1982, the curbed, concrete pit was constructed, and the use of earthen berms was discontinued. Fire fighting materials used in the exercises included aqueous fire fighting foam (AFFF), gaseous Halon 1301, water, and dry chemical extinguishers (Navy, 1986).

A 6,000-gallon underground storage tank located north of the fire training pit was used for an unknown time before 1982 to store waste fuels and solvents. A spill of an unknown amount of liquid (less than 6,000 gallons) originated from this tank in August 1982. Marine Pollution Control (MPC) of Calverton, New York removed 327 cubic yards of contaminated soil from the tank and spill areas in late August and

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early September 1982 because of the spill. Four groundwater monitoring wells were installed in the spill area in August 1982. The concrete pit was constructed after the spill cleanup to prevent further soil contamination by waste fuels. A 1,000-gallon aboveground fuel tank was installed to replace the 6,000-gallon underground tank (Navy, 1986). The 1,000-gallon tank was removed in 1996.

A second spill of approximately 300 gallons of waste No. 2 fuel oil occurred in 1983 because of a leak in the piping leading from the 1,000-gallon tank. Seven additional monitoring wells were installed by MPC to monitor potential contamination resulting from the spills. By early 1987, 12 wells were located in the area. MPC installed six additional wells in November 1987 (Navy, 1986).

A groundwater recovery system was installed in December 1987. This system consisted both of an active and a passive recovery system. The active recovery system included a groundwater pumping well, an oil recovery well, and an oil water separator tank. The passive recovery system consisted of hydrophobic filters located in shallow wells. The active recovery system was shut down in 1993. Passive free product recovery continued until 1996. As of December 1996, approximately 325 gallons of petroleum product have been removed from this site. In 2000, a passive recovery system, using adsorbent media, was initiated.

According to the IAS, hazardous materials expected to be associated with the fire training area include petroleum, oil, and lubricant (POL); waste solvents such as toluene, methyl ethyl ketone, and lacquer thinner; and possibly soluble lead from fuels (Navy, 1996). There were also unsubstantiated reports of drum burial activities. Testing conducted during the 1995 RFI found no evidence of buried drums (HNUS, 1995a).

The land use within approximately 1/2-mile south (hydraulically downgradient) of Site 2 includes a former Northrop Grumman office building with a potable water well, a golf course with potable and irrigation wells, and an undeveloped wooded area. Northrop Grumman reported that VOC contamination has not been identified in their production well. The irrigation well was tested in 1999, and no VOCs were detected.

A pilot-scale air sparging and soil vapor extraction (AS/SVE) system was installed in 1995. As of 2000, approximately 80 pounds of target VOCs have been removed. In addition, an estimated 30,000 pounds of organics have been destroyed through biodegradation. VOC concentrations in soil and groundwater have been reduced by approximately 70 to 95 percent.

## 2.3 ECOLOGICAL SETTING

### 2.3.1 Vegetation

Three plant communities cover Site 2. The concrete pit is located in the southeastern portion of an approximately 9-acre clearing surrounded by forest. Vegetation in the clearing includes successional grasses and forbs, such as panic grass (*Panicum lanuginosum*), broomsedge (*Andropogon virginicus*), wild oats (*Avena fatua*), phragmites (*Phragmites australis*), fescues (*Festuca* sp.), quackgrass (*Agropyron repens*), raspberries (*Rubus* sp.), pigweed (*Amaranthus retroflexus*), and yellow sweet clover (*Melilotus officinalis*). The vegetation is generally dense throughout, except in the immediate vicinity of the fire training ring, where it is sparse.

The forest cover east, south, and west of the clearing is dominated by pitch pine (*Pinus rigida*) and oaks (primarily scarlet oak, *Quercus coccinea*) in roughly equal proportion. This forest cover is typical of the Long Island Pine Barrens. However, scrub oak (*Quercus ilicifolia*), described as common throughout the Pine Barrens, is only sparingly present. The forest cover north of the clearing is dominated by red maple (*Acer rubrum*) and undergrown by dense patches of woody shrubs such as sweet pepperbush (*Clethra alnifolia*), honeysuckle (*Lonicera* sp.), and highbush blueberry (*Vaccinium corymbosum*). There are also dense but localized patches of ladyfern (*Athyrium felix-femina*). Such forest vegetation sometimes occurs in seasonally saturated wetlands, but it is also a common type of successional forest in areas of former human disturbance.

### 2.3.2 Wildlife

The grassy clearing provides good habitat for wildlife favoring forest edges, such as the whitetail deer (*Odocoileus virginianus*), northern bobwhite (*Colinus virginianus*), eastern kingbird (*Tyrannus tyrannus*), indigo bunting (*Passerina cyanea*), and song sparrow (*Melospiza melodia*) (Kricher, 1988). As expected, several whitetail deer were observed during the June 1997 site visit. A diversity of food types for wildlife are available, including dry seeds from the grasses in the field, nuts (acorns) from the oaks in the forest, and fleshy berries from the blueberry cover in the forest. The presence of the clearing, as well as several wide road tracks and firebreaks crossing the forest, render the entire forest in this part of NWIRP Calverton of poor value to forest interior wildlife such as neotropical birds. Waterfowl and other wildlife typical of areas with wetlands and open water are not expected to occur in this area because there are no wetlands or water on or near Site 2.

### **2.3.3      Wetlands**

No areas on or adjoining Site 2 meets the technical criteria for delineation as wetlands (Environmental Laboratory, 1987). Although several dense patches of phragmites occur in the open land west of the fire training ring, they occur on disturbed upland soil rather than hydric (wetland) soil.

### **2.3.4      Aquatic Biota**

There are no aquatic habitats, and hence no aquatic biota, on or close to Site 2.

### **2.3.5      Special Status Species**

Records maintained by the NYSDEC Natural Heritage Program do not include any documented sightings of special status species at coordinates on or near Site 2 (Conrad, 1996).

## **2.4          GEOLOGY**

Ten soil borings (FT-SB-01 through FT-SB-10), three shallow permanent monitoring wells (FT-MW-03-S, FT-MW-04-S, and FT-MW-07-S), and four well clusters (FT-MW-01, FT-MW-02, FT-MW-05, and FT-MW-06) were installed at Site 2 as part of the previous RFI activities. Each well cluster consists of a shallow well and an intermediate well. The soil borings range in depth from 12 to 24 feet. The shallow wells range in depth from 30 to 50 feet and are installed to approximately 8 feet below the water table. The intermediate wells range in depth from 75.5 to 80 feet.

Based upon on-site borings and wells, the site is underlain by three distinct lithofacies comprised of an upper (A) lithofacies, a middle (B) lithofacies, and a lower (C) lithofacies. The upper lithofacies (A) consists predominantly of dark brown, brown, and orange silty, fine-grained sand with varying amounts of peat and clay. Fill encountered at the site is always associated with the upper lithofacies. The upper lithofacies ranges from 1 to 7 feet thick and was encountered in all the soil borings and monitoring wells excepting FT-MW-04-S and well clusters FT-MW-02 and FT-MW-06. The upper lithofacies (A) represents a mixture of fill, soil, and glacial deposits. The middle lithofacies (B) consists of light brown and tan fine-grained sand with varying amounts of medium-grained sand and pebbles. The middle lithofacies ranges from 54 to 78 feet thick and was encountered in all soil borings and monitoring wells. Well FT-MW-05-I penetrated an additional 18 feet of fine-grained sand with varying amounts of silt and clay. The middle lithofacies (B) probably represents undisturbed glacial deposits. The lower lithofacies (C) consists of grey silty clay and was encountered in wells FT-MW-02-I, FT-MW-05-I, and FT-MW-06-I. The lower lithofacies (C) may represent the Magothy Formation.

## **2.5 HYDROGEOLOGY**

Groundwater in the glacial deposits occurs under unconfined conditions. The depth to groundwater ranged from 11.68 to 29.90 feet in 1995. The elevation of the water table ranged from 41.08 feet mean sea level (msl) in well cluster FT-MW-01, the northernmost wells, to 39.80 feet msl in well cluster FT-MW-05, the southeastern-most wells. The groundwater flows to the south-southeast. Based on water levels in well clusters, there is no vertical gradient present. The hydraulic conductivity calculated for glacial deposits from slug tests ranges from 0.038 feet per minute (ft/min) (55 ft/day) to 0.077 ft/min (111 ft/day) for sediments shallower than 28 feet. The hydraulic conductivity ranges from 0.024 ft/min (35 ft/day) to 0.056 ft/min (81 ft/day) for sediments deeper than 64 feet.

## **2.6 PREVIOUS INVESTIGATIONS**

### **2.6.1 Initial Assessment Study (IAS)**

An IAS was performed for the NWIRP Calverton in 1986 (Navy 1986). This study identified seven potential areas of concern, including Site 2.

### **2.6.2 Site Investigation (SI)**

As a follow-up to the IAS, an SI was conducted at NWIRP Calverton (HNUS, 1992a). The SI investigated seven sites, including Site 2. The sites identified can be classified as landfill-type sites or sites resulting from documented or suspected historical spills or leaks of fuels, oils, or solvents. Spills have been documented at Site 2. In addition, floating free product has been identified in monitoring wells.

### **2.6.3 RCRA Facility Investigation (RFI)**

An RFI was conducted in 1994 and 1995 (HNUS, 1995a). The conclusions from this investigation are summarized as follows:

- VOCs were detected at relatively high concentrations in Site 2 soil. The fire training pit is the most likely primary source area. Other relatively minor source areas were, or are, present at the site including an area west of the fire training pit (based on groundwater data) and an area north of the fire training pit (Test Pit 14). VOCs detected in soil include solvents and fuel-related contaminants. Solvents detected include 2-butanone (5,900 micrograms per kilogram [µg/kg]), chloroethane (330 µg/kg), dichlorobenzene (900 µg/kg), tetrachloroethene (470 µg/kg), and 1,1,1-trichloroethane (9,900 µg/kg). Fuel-related contaminants detected include ethylbenzene (3,700 µg/kg), toluene (6,100 µg/kg), and xylenes (85,000 µg/kg).

- A RCRA hazardous waste characteristic evaluation (40 Code of Federal Regulations [CFR] 261) of soil samples indicated that the material did not exhibit the Toxicity Characteristic. One soil sample was measured to have a flash point less than 140°F, which is the threshold for the characteristic of ignitability. This sample, however, did not have a measurable British Thermal Unit (BTU) value, indicating that only trace levels of fuel-related chemicals are present and likely caused the measurable flash point.
- Polychlorinated biphenyls (PCBs) (3,640 µg/kg), pesticides (less than 100 µg/kg), and semivolatile organic compounds (SVOCs), including polynuclear aromatic hydrocarbons (PAHs) and phthalates, were detected in several soil samples. Typical PCB standards for industrial use and residential use are 10,000 µg/kg and 1,000 µg/kg, respectively.
- Metals including antimony (7.9 milligrams per kilogram [mg/kg]), lead (390 mg/kg), and selenium (0.89 mg/kg) were detected in soil at concentrations greater than background levels.
- One drum was found on the surface of the site. The drum was placed in an overpack container during RFI field activities and was removed as a separate interim action. Despite an extensive geophysical survey of the site and test pit program, no other drums were found at Site 2. It appears that widespread drum disposal or burial did not occur at Site 2.
- Groundwater testing during the initial RFI in 1994 and 1995 detected the following VOCs at concentrations above federal Maximum Contaminant Levels (MCLs) or New York groundwater quality standards: chloroethane (1,100 micrograms per liter [µg/L]), 1,1-dichloroethane (1,200 µg/L), toluene (320 µg/L), 1,1,1-trichloroethane (140 µg/L), and xylenes (230 µg/L). By June 1997, the maximum detected chlorinated VOC concentration was 78 µg/L (1,2-dichloroethene). The maximum detected fuel-related concentration was for xylenes (91 µg/L). The area of these detections was addressed by the pilot-scale AS/SVE system that operated between 1995 and 1997. The state groundwater standard for most VOCs is 5 µg/L. PCBs (18 µg/L), PAHs (3 µg/L), and lead (30.8 µg/L) were detected at concentrations above federal MCLs or state groundwater quality standards. Phthalates and pesticides were also detected at concentrations below these standards in several monitoring well samples. Based on the similarity between chemicals found in Site 2 soil and groundwater, it is likely that soil contaminants have affected groundwater.
- Floating free product has been identified at Site 2. The location of the free product corresponds to the location of the most contaminated groundwater. Free product recovery was an ongoing Northrop Grumman operation until 1996.

- The extent of soil contamination is adequately defined. The estimated areal extent of contaminated soil is 80,000 square feet. At an average depth of 8.2 feet, the estimated volume of contaminated soil was 25,000 cubic yards. This volume has been reduced significantly since the operation of the AS/SVE system (CF Braun, 1996a; CF Braun, 1996b).
- The horizontal and vertical extent of groundwater contamination had been adequately characterized except to the south (off site) and east. This is based on the detection of VOCs in well FT-MW-05-S, the most southeastern monitoring well.

#### **2.6.4 Baseline Human Health Risk Assessment**

A baseline human health risk assessment was performed as part of the RFI. The baseline risk assessment found that there might be unacceptable risks to current workers. PCBs (3,600 µg/kg) in the surface soil resulted in the most significant potential cancer risk (4.5E-05). Under a hypothetical future residential land use scenario, unacceptable risks were calculated from direct contact with soil and domestic use of groundwater. Hazard indices (HIs) and incremental cancer risks (ICRs) exceed 1.0 and 1E-04, respectively, for both media. The primary contaminants of concern for future residents include solvents, PAHs, PCBs, arsenic, and manganese.

Details of the baseline human health risk assessment are described in the following sections.

##### **2.6.4.1 Risk Characterization Approach**

The results of the risk assessment developed during the 1995 RFI (HNUS, 1995a) are summarized below. Additional detail is presented in Table 5-17 of the 1995 RFI report. The potential receptor evaluated for the current land use scenario is a maintenance worker performing tasks near Site 2. Risks to hypothetical receptors assuming a future residential land use scenario was also evaluated.

##### **2.6.4.2 Current Maintenance Worker Exposure**

The total ICR estimate developed for a maintenance worker assuming exposure to contaminants detected in the soil at Site 2 was 4.3E-05. This ICR estimate is within the 1E-04 to 1E-06 target risk range used by EPA to determine the need for action at Superfund and RCRA sites or to formulate standards and criteria (e.g., the Federal Safe Drinking Water Act standards). Individual risk estimates developed for benzo(a)pyrene, benzo(b)fluoranthene, and PCBs exceeded 1E-06. However, only the risk estimate for benzo(a)pyrene exceeded 1E-05. The HI, which is an indicator of the potential for noncarcinogenic adverse health effects, was calculated as 0.012. Adverse noncarcinogenic health effects are not anticipated when the HI is below 1.0.



#### 2.6.4.3 Future Residential Exposure

The risk assessment conducted assuming a future residential land use scenario considered representative concentrations in soil and groundwater. The total ICR estimate for an adult residential receptor was 9.6E-03, which exceeds the EPA target risk range of 1E-04 to 1E-06. The ICR estimate developed for contaminants in soil (4.9E-04) is lower than that for contaminants in groundwater (9.1E-03). The risk estimates for 1,1,2,2-tetrachloroethane, several PAHs, and PCBs exceeded 1E-06. Only the risk estimate for benzo(a)pyrene in soil exceeds 1E-04.

Groundwater exposure provides most of the risk. The following chemicals are the principal risk drivers:

- Chloroethane (3.82E-05)
- 1,1-Dichloroethene (9.12E-05)
- Tetrachloroethene (1.42E-05)
- Vinyl chloride (6.3E-04)
- Benzo(b)fluoranthene (1.31E-04)
- Benzo(k)fluoranthene (1.32E-05)
- PCBs (7.78E-03)
- Arsenic (3.25E-04)

The noncarcinogenic HIs developed for adult and child receptors assuming a future residential land use scenario were 28.9 and 66.5, respectively. There is a potential for adverse noncarcinogenic health effects when either the cumulative HI or chemical-specific hazard quotients (HQs) exceed 1.0. As with cancer risk, most of the noncarcinogenic risk is associated with exposure to chemicals in groundwater. HQs for individual contaminants in soil did not exceed 1.0. Individual HQs calculated for the following chemicals in groundwater exceed 1.0 for adult and/or child receptors: 1,1-dichloroethane, 1,2-dichloroethene, 4-methylphenol, Aroclor 1254 (a PCB), arsenic, and manganese.

#### 2.6.4.4 IEUBK Lead Modeling Results

The Integrated Exposure Uptake Biokinetic (IEUBK) Model was used to characterize potential effects associated with exposure to media containing lead. The model considers exposure to lead in air, food, soil and dust, and drinking water and estimates blood lead levels in receptors 0 to 6 years in age. The results are summarized in a probability histogram with the population experiencing blood lead levels greater than 10 µg/dL identified as a percentage. The modeling results indicated blood lead levels for child residents would exceed 10 µg/dL in 2.54 percent of the exposed population. The target is a value less than 5 percent. Therefore, lead is not a significant concern at Site 2.

#### 2.6.4.5 Qualitative Risk Assessment

The focus of the qualitative risk assessment is to identify regulations, such as applicable or relevant and appropriate requirements (ARARs), and other standards, such as to be considered (TBC) criteria, that are exceeded by site contaminant levels. The standards presented have been developed for protection of human health or the environment. Criteria developed for the protection of ecological receptors are not considered. Discussion of the qualitative risk assessment is presented by medium.

##### Soil Standards

Although no federal standards are generally available for evaluating soil in a qualitative manner, NYSDEC has adopted soil concentrations that are designed to be protective of human health and groundwater. The criteria are identified in Technical and Administrative Guidance Memorandum (TAGM) Number 4046 (NYSDEC, 1994). TAGM concentrations for organic compounds were developed to ensure attainment of groundwater standards under an equilibrium partitioning scenario. The numerical soil standard for protection of groundwater is based on compound-specific organic carbon partitioning coefficients (KOCs), a default dilution attenuation factor (100 to 1), and a soil organic carbon content of 1 percent. The standard for protection of human health is based on the risk from soil ingestion. Recommended clean-up objectives are identified on the basis of background (regional or site-specific) and health-based criteria.

As identified in the 1995 RFI report, at least one reported concentration for the following chemicals exceeded the TAGM standard: 2-butanone, 1,1-dichloroethane, 4-methyl-2-pentanone, 1,1,2,2-tetrachloroethane, toluene, 1,1,1-trichloroethane, xylenes, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-dc)pyrene, nitrobenzene, PCBs (surface soil only), antimony, lead, and selenium. Exceedances of the TAGM clean-up goals are mostly located at FT-SB-03, although other locations are noted. The exceedances for metals are based on a direct comparison to the 95th percentile value for the background data set. The metals identified were detected at concentrations greater than background using the T-test.

##### Groundwater Standards

Analytical results for groundwater were compared to federal and state MCLs and state groundwater quality standards to identify the locations where standards are exceeded. These standards were exceeded for most of the detected groundwater chemicals in at least one groundwater sample. VOC and SVOC concentrations exceeded the respective standards at the shallow monitoring well in clusters FT-MW-02, FT-MW-03, and FT-MW-05. Exceedances for pesticides, PCBs, and metals were noted at shallow monitoring wells at peripheral locations including FT-MW-01, FT-MW-04, FT-MW-06, and FT-

MW-07. Exceedances in intermediate wells were only for manganese. This may support the presumption that the levels of manganese detected in groundwater are naturally occurring.

#### **2.6.4.6 Conclusions**

The conclusions of the baseline human health risk assessment were based on the results of quantitative and qualitative risk assessment methodologies and identify potential risks associated with exposure to soil and groundwater at Site 2. The conservative nature of the risk assessment approach is intended to indicate possible risks; however, the assessments do not provide expressly accurate or definitive information regarding the occurrence of adverse health effects in humans exposure to site media. Several factors that are not apparent in the conclusions necessitate careful interpretation of the results and the risk management that will follow as future activities are planned. Cancer Slope Factors (CSFs) are the upper 95 percent confidence limit of a dose-response curve generally derived from animal studies. Actual human risk, while not identifiable, is not expected to exceed the upper limit based on the CSFs and, in fact, may be lower.

Conclusions were as follows:

- Based on the quantitative risk assessment, the current conditions at Site 2 pose cancer risks at levels that exceed benchmarks commonly used by EPA for risk management (i.e., ICR in excess of  $1\text{E-}06$ ). The calculated HI, which measures the likelihood of occurrence of adverse noncarcinogenic systemic health effects, is less than 1.0, which indicates none are expected. Under the evaluated scenario, occupational receptors are exposed during routine activity via ingestion and dermal exposure. Detected concentrations of PCBs may be sufficient to cause cancer at an incidence of approximately one in 23,000 ( $4.3\text{E-}05$ ) individuals. This is within the EPA acceptable risk range ( $1\text{E-}04$  to  $1\text{E-}06$ ).
- Under a hypothetical future residential land use scenario, the calculated risks are above cancer and noncancer risk benchmarks. Exposure scenarios including soil contact and domestic use of groundwater were evaluated. The majority of the risks are from exposure to groundwater, although notable risks are also present from exposure to soil. The estimated ICR for adult residents ( $9.6\text{E-}03$ ) is attributable to chlorinated solvents, PAHs, PCBs, and arsenic in groundwater and PCBs and PAHs in soil. The cumulative HI, an indicator of the potential for adverse systemic health effects, for the child resident was 66.5. Primary contributors to this HI are 1,1-dichloroethane, 1,2-dichloroethene, 4-methylphenol, Aroclor 1254 (a PCB), arsenic, and manganese in groundwater. Soil exposures did not result in an HI greater than 1.0 for this receptor. The child resident is the most sensitive receptor for systemic health effects because of the high contact rate relative to the overall body weight of the receptor. The effects of these chemicals are likely to manifest themselves in the form of argyria (a skin condition), neurological dysfunction, and liver and kidney damage.

- Analytical results for some chemicals exceeded regulatory and other standards. The soil is contaminated with chlorinated and non-chlorinated solvents, PAHs, nitroaromatics, PCBs, and metals at concentrations above the NYSDEC TAGM 4046 Recommended Cleanup Goals. Groundwater chemical concentrations also exceed state and federal drinking water standards and state groundwater quality standards. Exceedances were noted for a variety of chlorinated and non-chlorinated solvents, dichlorobenzene, phenolics, PAHs, pesticides, PCBs, and metals. The conclusions of the quantitative risk assessment are generally the same as for the qualitative risk assessment.
- The risk assessment indicated that exposure to soil and groundwater at Site 2 poses unacceptable human health risks for current and hypothetical future land users at the site. Chemicals of concern include chlorinated and non-chlorinated solvents, substituted benzenes, phenolics, PAHs, pesticides, PCBs, and heavy metals in soil and groundwater. Current risk levels do not exceed the upper bound EPA cancer risk range goal of 1E-04.

## 2.7 SITE CHRONOLOGY

- 1952/55 to 1982:** Fire fighting exercises were conducted in unlined earthen pits, by floating petroleum products and solvents on top of a water layer.
- 1982:** A fuel spill was noted. 327 cubic yards of contaminated soils were removed. Four groundwater monitoring wells were installed and the underground storage tank was removed.
- A new above ground storage tank and a concrete ring structure were installed. Fire fighting activities continued in the ring until approximately 1995.
- 1983:** A fuel spill was noted and remediated.
- 1987:** 14 additional monitoring wells were installed to delineate the extent of petroleum contamination.
- 1985 to 1986:** The Navy conducted an Initial Assessment Study for Calverton and identified the Site 2 - Fire Training Area as a potential area of concern.
- 1987:** 14 additional monitoring wells were installed to delineate the extent of petroleum contamination.

A groundwater and free product extraction (floating petroleum) system was installed to collect floating free product on the water table.

**1988 to 1991:**

Groundwater and free product extraction continued until 1993. Passive free product recovery continued until 1996 and was then restarted in 2000.

**1991 to 1992:**

The Navy conducted a Site Investigation at Calverton and confirmed the presence of contamination and recommended that a Remedial Investigation be conducted to delineate the nature and extent of contamination.

**1993 to 1994:**

The Navy prepared a work plan to conduct a remedial investigation at several sites at Calverton, including Site 2 - Fire Training Area.

**1994 to 1995:**

The Navy conducted a Remedial Investigation at Site 2.

**1995:**

The Navy conducted a large-scale air sparging/soil vapor extraction (AS/SVE) pilot test at Site 2. A reduction in petroleum products and solvents in soils and groundwater were noted. The AS/SVE system was operated seasonally in 1996, 1997, 1998, and 2000.

**1996 to 1997:**

The Navy prepared a work plan to conduct a Phase 2 remedial investigation at several sites including Site 2.

**1997:**

The Navy establishes the Restoration Advisory Board for NWIRP Calverton.

**1997 to 1998:**

The Navy conducted a Phase 2 Remedial Investigation at Site 2. Specific areas addressed include onsite groundwater near the fence, off site groundwater near the site, offsite seeps and an off-site irrigation well. A draft report was submitted to the regulators.

**1998:**

The Navy conducted an engineering evaluation/cost analysis for several sites including Site 2. The analysis recommended that free product recovery be restarted at Site 2.

**1999:**

The Navy conducts groundwater extraction tests in anticipation of a new free product recovery system (vapor-assisted oil skimming – VAOS). However,

based on subsequent field testing, several interferences were noted that impact the ability to successfully extract and treat the groundwater. An alternate recommendation was made to recover product using passive techniques (i.e. absorbent pillows).

**2000:**

The Navy proceeds with passive free product recovery and restarts the AS/SVE system at Site 2. As of December 2000, only minor levels of residual free product are noted.

**2.8 DATA GAPS**

Site 2 was investigated to fully delineate the nature and extent of contamination in soil and groundwater. Data gaps from the previous RFI are as follows:

- Determination of the eastern extent of on-site groundwater contamination.
- Determination of whether on-site groundwater has migrated off site.

### **3.0 PHASE 2 GROUNDWATER INVESTIGATION**

Between March 1997 and July 1997, the following Phase 2 field investigation activities were conducted at Site 2:

- Installation of four on-site and four off-site temporary monitoring wells. Groundwater samples were collected at two or more depths at each location and analyzed for VOCs.
- Installation of one shallow and one intermediate depth permanent monitoring wells.
- Sampling permanent monitoring wells (2 rounds) and analyzing the samples for VOCs.

#### **3.1 TEMPORARY MONITORING WELLS**

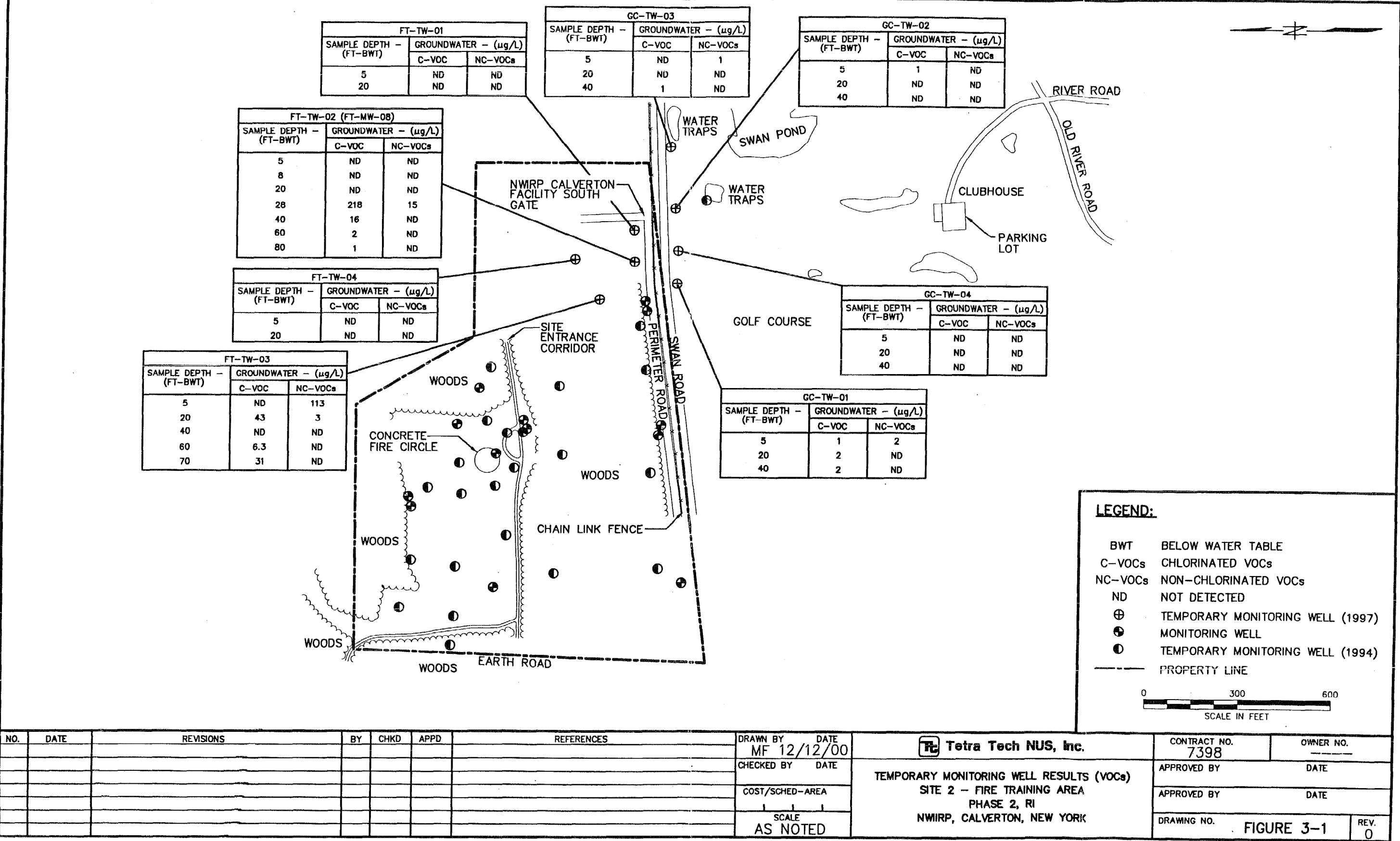
Four temporary monitoring wells were installed on site to the south and east of the fire training ring to define the eastern boundary of the on-site groundwater contamination. Four temporary monitoring wells were installed off site to the south and east of the fire training ring to determine whether groundwater contamination had migrated off site. In addition, an off-site irrigation well was sampled to determine whether on-site groundwater contamination had impacted this well. The locations of the temporary monitoring wells are presented in Figure 3-1. The off-site irrigation well is located near the Golf Course Club House. VOCs were not detected in the irrigation well.

Two methods of sampling were used for the installation of the temporary monitoring wells at Site 2. The majority of the temporary wells were installed using the Geoprobe™ direct push method. The Geoprobe™ consists of a truck-mounted sampling device that uses hydraulic pressure to push sampling rods into the ground. Groundwater samples were collected from various depths, and soil samples were collected at selected locations using this method. Several of the deeper groundwater samples were obtained using the more traditional hollow stem auger method with a slotted screen. Details of the samples were recorded on sample log sheets, which are included in Appendix B. Chain of custody forms are provided in Appendix C.

The groundwater samples were submitted to Volumetric for quick-turnaround (48 hours) GC VOC analysis. The results are presented in Tables 3-1 and 3-2. The results were compared to NYSDEC drinking water standards and groundwater quality criteria. Chemical-specific VOC exceedances were only noted in temporary monitoring wells FT-TW-02 and FT-TW-03. This finding indicates that the extent of groundwater contamination is defined and currently does not extend off site. The results of the current investigation are plotted on Figure 3-1.

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TABLE 3-1  
 TEMPORARY MONITORING WELL ANALYTICAL RESULTS  
 SITE 2 - FIRE TRAINING AREA  
 PHASE 2 RFI  
 NWIRP CALVERTON, NEW YORK  
 PAGE 1 OF 2

Analyte	FT-TW-01		FT-TW-02				
	Depth (ft bgs/bwt)		Depth (ft bgs/bwt)				
	19/5	34/20	19/5	34/20	45/40	65/60	85/80
<b>NONCHLORINATED VOCs (µg/L)</b>							
Benzene							
Ethylbenzene							
Toluene							
Xylene							
<b>CHLORINATED VOCs (µg/L)</b>							
1,1-Dichloroethane					13	2	0.7
1,1-Dichloroethene					1.6		
1,2-Dichloroethene							
Freon							
1,1,1-Trichloroethane					0.7		
1,1,2-Trichloroethane							

TABLE 3-1

TEMPORARY MONITORING WELL ANALYTICAL RESULTS  
 SITE 2 - FIRE TRAINING AREA  
 PHASE 2 RFI  
 NWIRP CALVERTON, NEW YORK  
 PAGE 2 OF 2

Analyte	FT-TW-03					FT-TW-04	
	Depth (ft bgs/bwt)					Depth (ft bgs/bwt)	
	19/5	34/20	48/40	68/60	78/70	19/5	34/20
<b>NONCHLORINATED VOCs (µg/L)</b>							
Benzene	18						
Ethylbenzene	62						
Toluene	5.3						
Xylene	28	2.5					
<b>CHLORINATED VOCs (µg/L)</b>							
1,1-Dichloroethane				2.5	31		
1,1-Dichloroethene		0.8					
1,2-Dichloroethene		1.2			13		
Freon		41		2.8			
1,1,1-Trichloroethane							
1,1,2-Trichloroethane				0.9	1.5		

TABLE 3-2

TEMPORARY MONITORING WELL ANALYTICAL RESULTS  
GOLF COURSE  
PHASE 2 RFI  
NWIRP CALVERTON, NEW YORK

Analyte	GC-TW-01			GC-TW-02			GC-TW-03			GC-TW-04		
	Depth (ft bgs/bwt)			Depth (ft bgs/bwt)			Depth (ft bgs/bwt)			Depth (ft bgs/bwt)		
	19/5	34/20	54/40	19/5	34/20	54/40	19/5	34/20	54/40	19/5	34/20	54/40
<b>NONCHLORINATED VOCs (µg/L)</b>												
Benzene							1.7					
Ethylbenzene												
Toluene												
Xylene												
<b>CHLORINATED VOCs (µg/L)</b>												
1,1-Dichloroethane												
1,1-Dichloroethene												
1,2-Dichloroethene												
Freon												
1,1,1-Trichloroethane			0.6									
1,1,2-Trichloroethane				0.82			0.98	2.3	2.4			

### 3.2 PERMANENT MONITORING WELLS

Two new permanent monitoring wells (FT-MW-08-S and FT-MW-08-I) were installed at the downgradient edge of the VOC contaminated groundwater (see Figure 3-2). Construction details are summarized in Table 3-3. Monitoring well construction sheets are provided in Appendix D.

Groundwater samples were collected in June and November 1997. A low-flow sampling technique was used to collect these samples. The purpose of this sampling technique is to minimize stress on the surrounding fill material by using low water-level drawdowns and pumping rates. EPA Standard Operating Procedures (SOPs) were followed during collection of these samples.

A Grunfos-brand submersible pump with a flow control box was used to collect the samples. Teflon<sup>TM</sup> lined polyethylene tubing was used as the discharge for the pump. The water level in the well was measured first, and then the pump was lowered slowly and gently to the mid-point of the saturated screen length. The pump was then turned on, and the flow rate was adjusted very slowly. The maximum amount of water pumped out of any well was 1 liter per minute.

While the well was being pumped, the following indicator field parameters were measured approximately every 5 minutes: temperature, specific conductivity, pH, dissolved oxygen (DO), and turbidity. The EPA Region 2 SOPs specify the following guidelines for field parameter stabilization:

- Temperature – 3 percent
- Specific conductivity – 3 percent
- pH –  $\pm 0.1$  unit
- DO – 10 percent
- Turbidity – 10 percent for values greater than 1 nephelometric turbidity unit (NTU)

These guidelines were followed, and the data were recorded on field log sheets (Appendix B). After stabilization, the sample was collected directly from the tubing into the sample container. The submersible pump was decontaminated between each sampling station, and the tubing was discarded. Details of the samples were recorded on sample log sheets, which are included in Appendix B. Chain of custody forms are provided in Appendix C.

Samples from each of the monitoring wells were analyzed for TCL VOCs by Quanterra. Analytical results from this round of sampling are presented in Table 3-4. The analytical results that exceeded Federal or

FT-MW-02-S											
CHEMICAL	AUG '94	AUG '94 DU	MAR '95	MAR '95 DU	AUG '95	SEPT '95	OCT '95	NOV '95	DEC '95	JAN '96	JUN '97
VINYL CHLORIDE	25	25	5 J	9 J	25				NA		
CHLOROETHANE	1,100	1,100	190	340	420	21	20	17	NA	40 J	
1,1-DICHLOROETHENE	9 J	13 J			8		6		NA		
1,1-DICHLOROETHENE	1,100	1,200	310	590	200	39	36	24	NA	69	58
1,2-DICHLOROETHENE (total)	310	290	93	100 J	220	18	21	14	NA	53	78
2-BUTANONE	71 J		82	130 J	140				NA	100	69
1,1,1-TRICHLOROETHANE	120	140	50	58 J	59	20	41	26	NA	29 J	
TRICHLOROETHANE	7 J	9 J							NA		
BENZENE	14 J	15 J			8				NA		19 J
ACETONE			85 J	140 J	52				NA	280	250
TETRACHLOROETHENE	20	21	13		12	5	12	12	NA	37 J	
THUENE	280	320	200	320	250	78	75	62	NA	94	63
ETHYLBENZENE	16 J	21	18	18 J	13	13	12	10	NA		8.7 J
TOTAL XYLENES	180	230	180	150 J	110	120	120	100	NA	140	91
1,2-DICHLOROETHENE	8 J	7 J			5 J						NA
4-METHYLPHENOL	160	180	120	110	250	91				72 J	NA
TOTAL PAH'S	94 J	111 J	19	19	82	89	124	169	95	101	NA
TOTAL PHTHALATES								161			NA
PCB'S	18 J	17 J	4.4 JN	6.9 JN	26	10	9	8	2.6 J	20	NA
MANGANESE	459	436	519	3.5 J	NA	NA	NA	NA	NA	NA	NA
THALLIUM					NA	NA	NA	NA	NA	NA	NA

FT-MW-04		
CHEMICAL	AUG '94	MAR '95
PCB'S	0.84 JN	0.615
MANGANESE	525	682

FT-MW-08-S		
CHEMICAL	JUN '97	NOV '97
VOC'S	ND	

FT-MW-08-I		
CHEMICAL	JUN '97	NOV '97
CHLOROETHANE	91	30
1,1-DICHLOROETHENE	110	55
1,2-DICHLOROETHANE (TOTAL)	5.2 J	3.7
1,1,1-TRICHLOROETHANE	13	3.8
TOTAL XYLENES	13	

FT-MW-05-S				
CHEMICAL	AUG '94	MAR '95	JUN '97	NOV '97
VINYL CHLORIDE	4 J	4 J		
CHLOROETHANE	130	79		
1,1-DICHLOROETHANE	16	22		
1,2-DICHLOROETHENE (TOTAL)	26	26		
THUENE	23			
TOTAL XYLENES	17	8 J		
LEAD	30.8 J		NA	NA
MANGANESE	725 J	550	NA	NA

FT-MW-05-I				
CHEMICAL	AUG '94	MAR '95	JUN '97	NOV '97
MANGANESE	3490 J	1340	NA	NA

FT-MW-06-I				
CHEMICAL	AUG '94	MAR '95	JUN '97	JUN '97DU
TCL/TAL	ND	ND	ND	ND

FT-MW-06-S			
CHEMICAL	AUG '94	MAR '95	JUN '97
MANGANESE	1100 J	808	NA

FT-MW-02-I			
CHEMICAL	AUG '94	MAR '95	MAR '95 DU
PCB'S			1.1
THALLIUM			6.3 J

FT-MW-01-S		
CHEMICAL	AUG '94	MAR '95
PCB'S	1.38 JN	0.56 JN
LEAD	25.4 J	
MANGANESE	2340 J	1010

FT-MW-01-I		
CHEMICAL	AUG '94	MAR '95
TCL/TAL		

FT-MW-03-S			
CHEMICAL	AUG '94	AUG '94DU	MAR '95
1,1,1-TRICHLOROETHANE	5 J	5 J	6 J
TRICHLOROETHENE	51	48	87
PCB'S	0.83 JN	0.83 JN	
MANGANESE	1880 J	1810 J	854

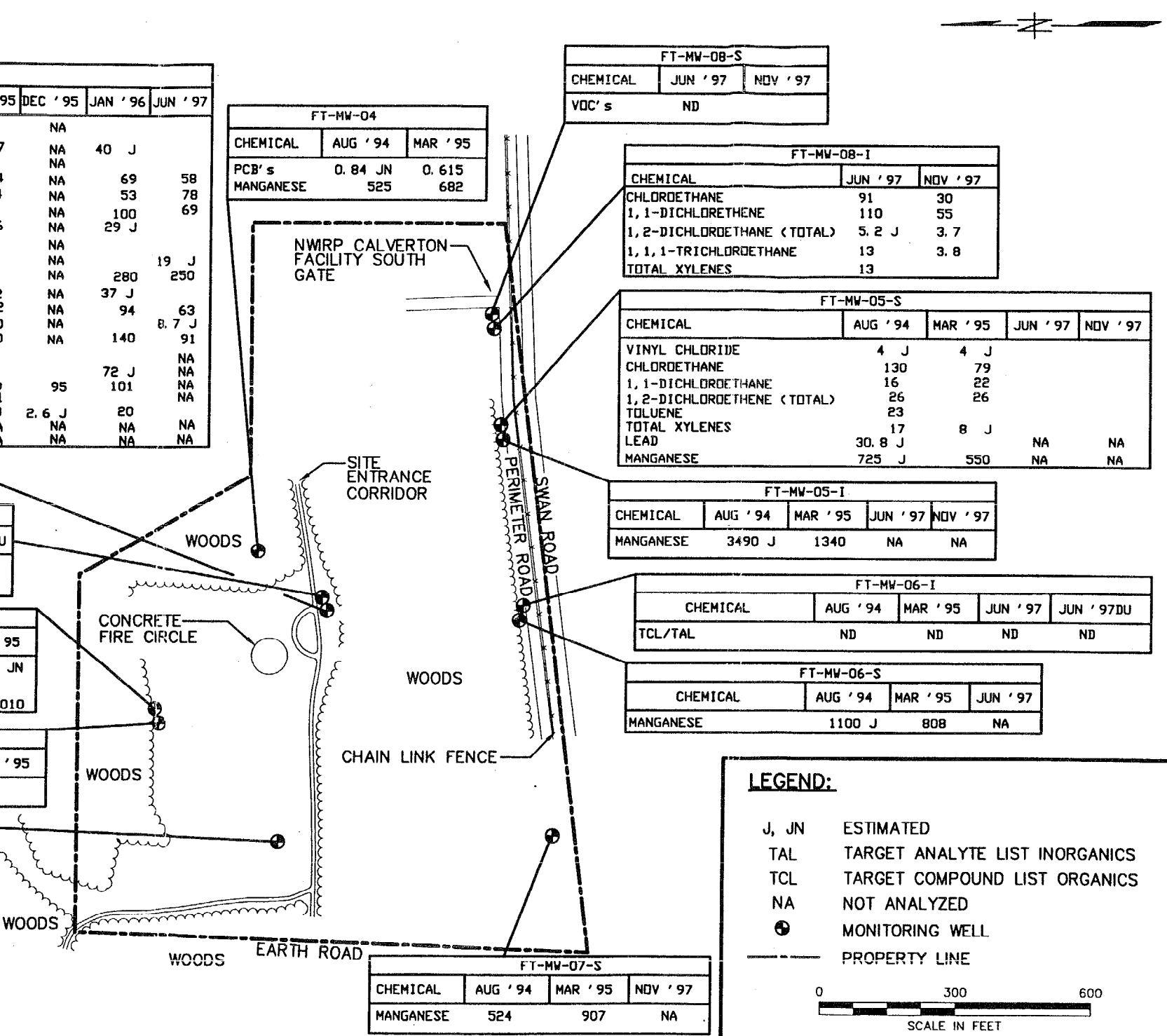
NOTES

SAMPLE RESULTS FOR ORGANICS AND INORGANICS ARE REPORTED AS ug/L.

AUGUST 1994/MARCH 1995 SAMPLES WERE ANALYZED FOR TCL ORGANICS AND TAL METALS.

JUNE/NOVEMBER 1997 SAMPLES WERE ANALYZED FOR TCL VOCs.

A BLANK RESULT INDICATES PARAMETER WAS NOT DETECTED ABOVE POTENTIAL CRITERIA.



LEGEND:

- J, JN ESTIMATED
- TAL TARGET ANALYTE LIST INORGANICS
- TCL TARGET COMPOUND LIST ORGANICS
- NA NOT ANALYZED
- MONITORING WELL
- PROPERTY LINE

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	CONTRACT NO.	OWNER NO.
							MF	12/12/00	7398	
							CHECKED BY	DATE	APPROVED BY	DATE
							COST/SCHED-AREA		APPROVED BY	DATE
							SCALE		DRAWING NO.	REV.
							AS NOTED		FIGURE 3-2	0

00589E042

TABLE 3-3

**GROUNDWATER MONITORING WELL CONSTRUCTION DETAILS  
SITE 2 – FIRE TRAINING AREA  
NWIRP CALVERTON, NEW YORK**

Well No.	Date Installed	Top of Casing Elevation (feet msl)	Depth to Water (feet)	Total Well Depth (feet)	Screened Interval (feet bgs)	Water Level Elevation (feet msl)
FT-MW08-S	06/07/97	47.92	7.52	14	3 – 14	40.40
FT-MW08-I	06/21/97	48.01	7.64	33	23 - 33	40.37

bgs – below ground surface

msl – mean sea level

TABLE 3-4

SUMMARY OF GROUNDWATER ANALYTICAL DATA (µg/L)  
 SITE 2 – FIRE TRAINING AREA  
 NWIRP CALVERTON, NEW YORK  
 PAGE 1 OF 3

Analyte	MDL	Groundwater Standard <sup>(1)</sup>	FT-MW-02-S 06/97	FT-MW-05-S 06/97	FT-MW-05-S 11/97	FT-MW-05-I 06/97	FT-MW-05-I	DUP-01
							Field Duplicate 11/97	
Acetone	5.0	50	250					
2-Butanone	4.4	50	69					
Chloroethane	2.3	5						
Chloroform	1.5	100						
1,1-Dichloroethane	1.9	5	58			1.2		
1,2-Dichloroethene (total)	2.0 <sup>(2)</sup>	5	78					
Ethylbenzene	1.5	5	8.7					
4-Methyl-2- pentanone	7.0	50	14					
Tetrachloroethene	2.0	5	3.7					1.5
Toluene	2.2	5	63					
1,1,1- Trichloroethane	1.8	5	2.8			1.0		
Trichloroethene	1.8	5	19					
Xylenes (total)	2.0	5	91					
VOC TICs	NA	NA	Detected			Detected		



TABLE 3-4

**SUMMARY OF GROUNDWATER ANALYTICAL DATA (µg/L)**  
**SITE 2 – FIRE TRAINING AREA**  
**NWIRP CALVERTON, NEW YORK**  
**PAGE 2 OF 3**

Analyte	MDL	Groundwater	FT-MW-06-S	FT-MW-06-S	FT-MW-06-I	FT-DUP02-W	FT-MW-06-I
		Standard <sup>(1)</sup>	06/97	11/97	Field Duplicate 11/97		11/97
Acetone	5.0	50					
2-Butanone	4.4	50					
Chloroethane	2.3	5					
Chloroform	1.5	100			1.4	1.4	
1,1-Dichloroethane	1.9	5					
1,2-Dichloroethene (total)	2.0 <sup>(2)</sup>	5					
Ethylbenzene	1.5	5					
4-Methyl-2- pentanone	7.0	50					
Tetrachloroethene	2.0	5					
Toluene	2.2	5					
1,1,1- Trichloroethane	1.8	5					
Trichloroethene	1.8	5					
Xylenes (total)	2.0	5					
VOC TICs	NA	NA					

TABLE 3-4  
SUMMARY OF GROUNDWATER ANALYTICAL DATA (µg/L)  
SITE 2 – FIRE TRAINING AREA  
NWIRP CALVERTON, NEW YORK  
PAGE 3 OF 3

Analyte	MDL	Groundwater Standard <sup>(1)</sup>	FT-MW-07-S 11/97	FT-MW-08-S 6/97	FT-MW-08-S 11/97	FT-MW-08-I 6/97	FT-MW-08-I 11/97
Acetone	5.0	50					
2-Butanone	4.4	50					
Chloroethane	2.3	5				91	30
Chloroform	1.5	100					
1,1-Dichloroethane	1.9	5				110	55
1,2-Dichloroethene (total)	2.0 <sup>(2)</sup>	5				5.2	3.7
Ethylbenzene	1.5	5				2.0	
4-Methyl-2- pentanone	7.0	50					
Tetrachloroethene	2.0	5					
Toluene	2.2	5					
1,1,1- Trichloroethane	1.8	5				13	3.8
Trichloroethene	1.8	5					
Xylenes (total)	2.0	5				13	
VOC TICs	NA	NA			Detected	Detected	

A blank indicates that the chemical was not detected.

MDL: Method Detection Limit.

NA: Not Applicable.

TICs: Tentatively Identified Compounds.

(1) Based on Federal and NYSDEC MCLs.

(2) Based on trans-1,2-dichloroethene. MDL for cis-1,2-dichloroethene is 1.9 µg/L.

New York State groundwater or drinking water criteria are presented on Figure 3-2. Also included on this figure are results from previous rounds of groundwater testing (1994 and 1995) that exceed these criteria.

### **3.3 SUMMARY OF GROUNDWATER CONTAMINATION**

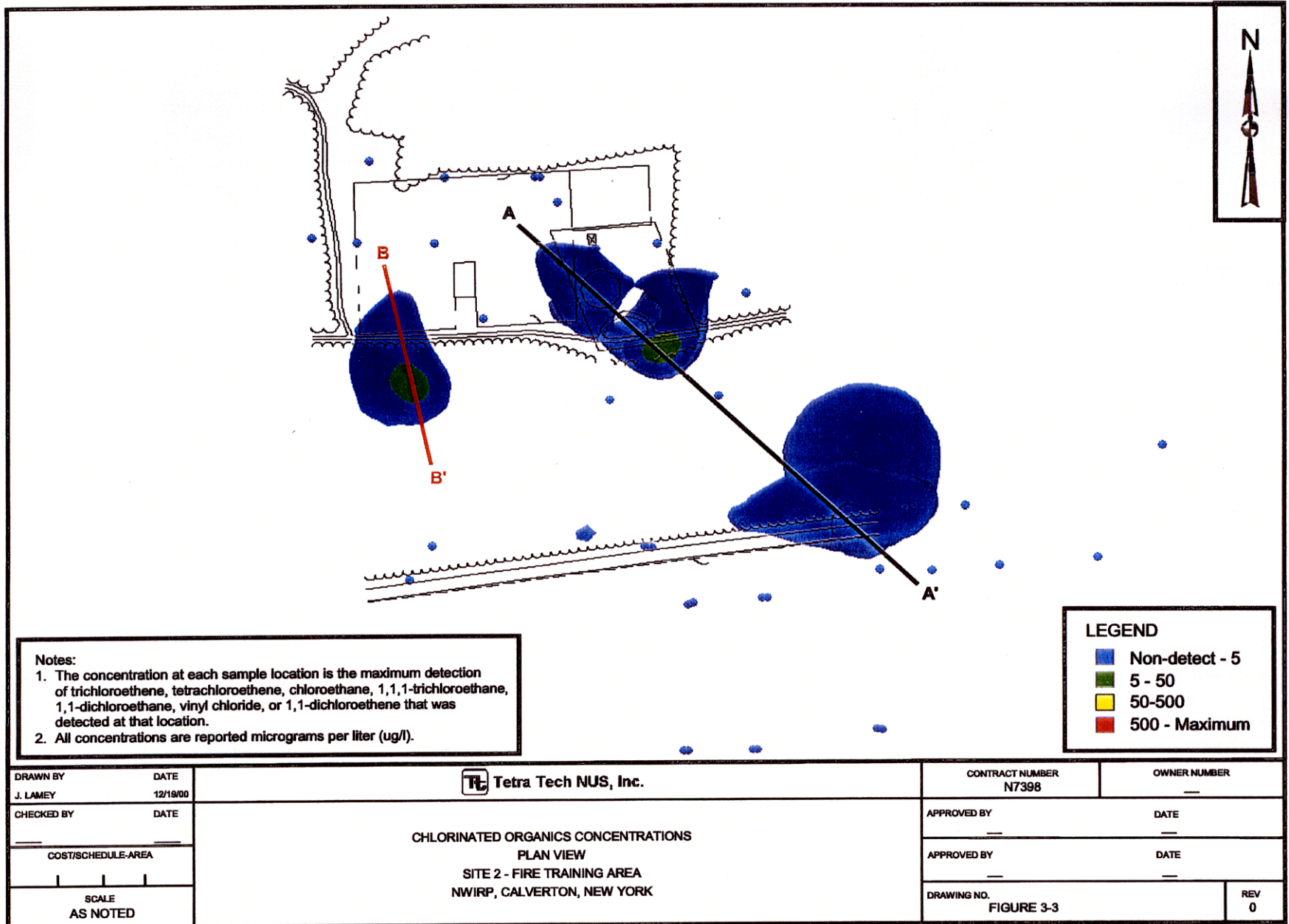
Data from the Phase 2 RI were used to delineate the extent of groundwater contamination through use of the Environmental Visualization System (EVS). EVS Figures 3-3 and 3-4 show a plan view and cross sections of the contaminant plumes for chlorinated VOCs, respectively. The highest concentrations of chlorinated VOCs are associated with the fire training ring. Chlorinated VOCs were also detected at lower concentrations downgradient (southeast) of this area. A separate area of chlorinated VOCs was also detected west of the fire training ring.

EVS Figures 3-5 and 3-6 show a plan view and cross section of the areas contaminated with BTEX compounds. The highest BTEX concentrations are also associated with the fire training ring and a downgradient area. There were several area where BTEX compounds were sporadically detected.

EVS Figures 3-7 and 3-8 show a plan view and cross section of the area contaminated with freon. Freon was only detected in a small area downgradient of the fire training ring and is not a primary contaminant at Site 2.

As shown on the above-referenced figures and based on the data collected to date, the extent of the groundwater contamination is adequately defined to proceed from the study phase to the remedial alternative analysis phase. However, as evidenced by the finding of different types of contaminants in different wells and the finding of pockets of groundwater contamination moving from one well to another (e.g., VOCs in FT-MW-05-S in 1995 and then in FT-MW-08-I in June 1997), the groundwater contamination associated with Site 2 is not one continuous plume, as shown on the EVS figures.

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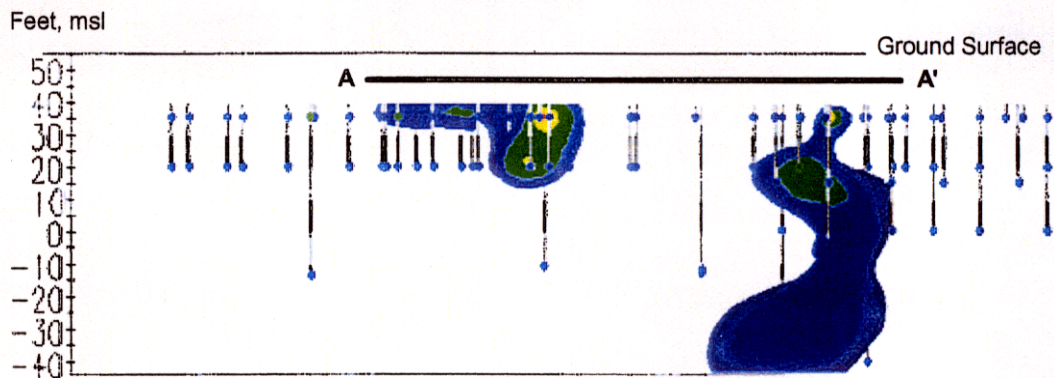


D:\CALVERTON\FIRE TRAINING AREA\GROUNDWATER\FINAL\_OUTPUTS\SITE2\_EVS.APR CHLORINATED ORGANICS PLUME - PLAN 12/19/00 JAL

00589FB5Y



### Cross Section A - A'



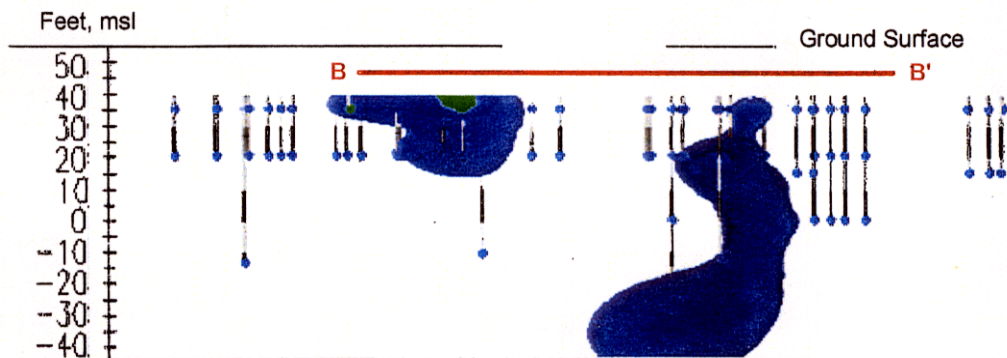
#### Notes:


1. The concentration at each sample location is the maximum detection of trichloroethene, tetrachloroethene, chloroethane, 1,1,1-trichloroethane, 1,1-dichloroethane, vinyl chloride, or 1,1-dichloroethene that was detected at that location.
2. All concentrations are reported micrograms per liter (ug/l).

#### LEGEND

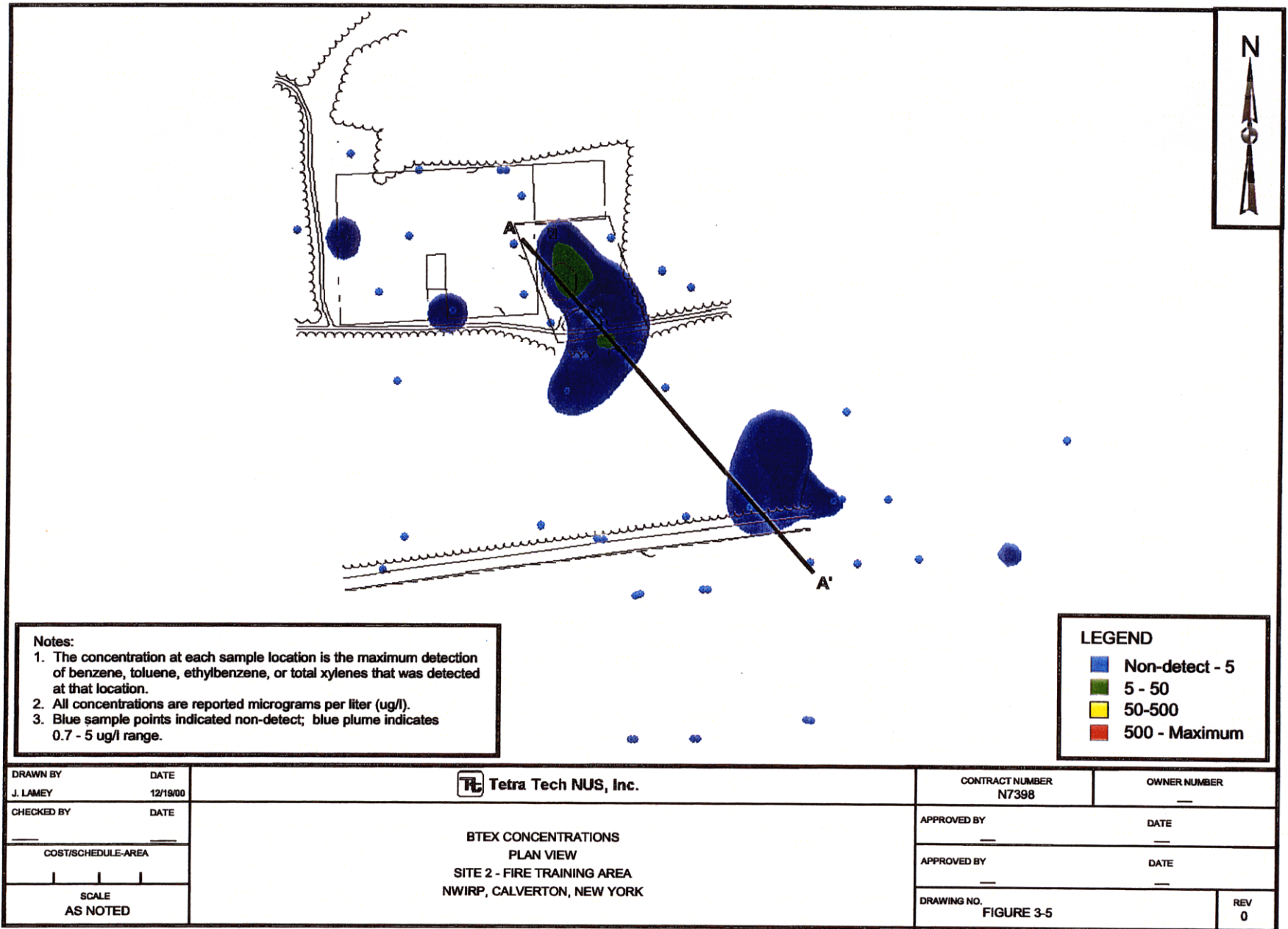
- Non-detect - 5
- 5 - 50
- 50-500
- 500 - Maximum

### Cross Section B - B'

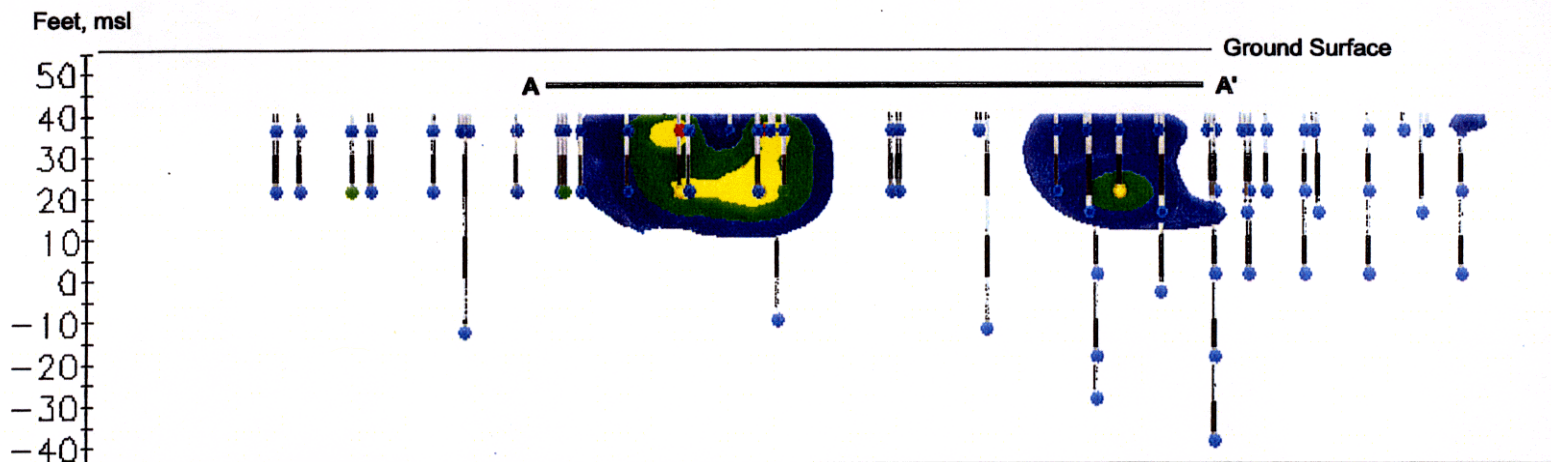


DRAWN BY J. LAMEY	DATE 12/19/00	 <b>Tetra Tech NUS, Inc.</b>  CHLORINATED ORGANICS CONCENTRATIONS CROSS SECTIONS A-A' AND B-B' SITE 2 - FIRE TRAINING AREA NWIRP, CALVERTON, NEW YORK	CONTRACT NUMBER N7398	OWNER NO. —
CHECKED BY —	DATE —		APPROVED BY —	DATE —
COST/SCHEDULE-AREA —	—		APPROVED BY —	DATE —
SCALE AS NOTED	—		DRAWING NO. FIGURE 3-4	REV 0

D:\CALVERTON\FIRE TRAINING AREA\GROUNDWATER\FINAL\_OUTPUTS\SITE2\_EVS.APR CHLORINATED ORGANICS PLUME - CROSS SECTIONS 12/19/00 JAL







## Notes:

1. The concentration at each sample location is the maximum detection of benzene, toluene, ethylbenzene, or total xylenes that was detected at that location.
2. All concentrations are reported micrograms per liter (ug/l).
3. Blue sample points indicated non-detect; blue plume indicates 0.7 - 5 ug/l range.

## LEGEND

- Non-detect - 5
- 5 - 50
- 50-500
- 500 - Maximum

DRAWN BY	DATE
J. LAMEY	12/19/00
CHECKED BY	DATE
____	____
COST/SCHEDULE-AREA	
____	
SCALE	
AS NOTED	

**Tetra Tech NUS, Inc.**

BTEX CONCENTRATIONS  
CROSS SECTION A-A'  
SITE 2 - FIRE TRAINING AREA  
NWIRP, CALVERTON, NEW YORK

CONTRACT NUMBER  
N7398

OWNER NUMBER

APPROVED BY \_\_\_\_\_ DATE \_\_\_\_\_

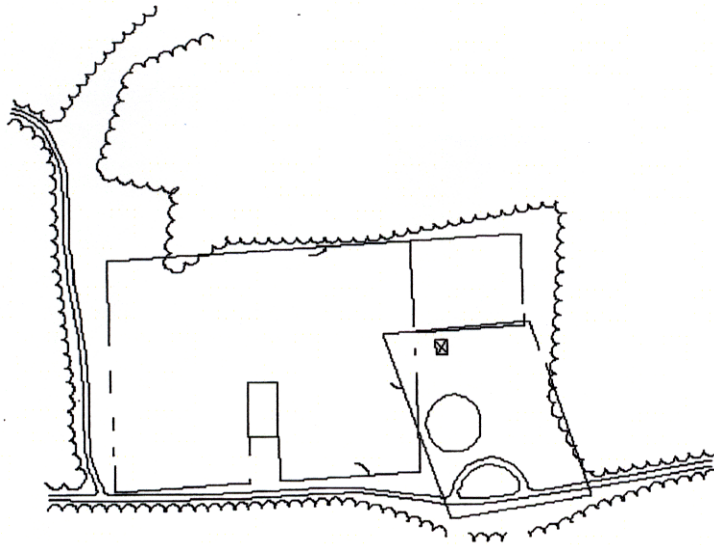
APPROVED BY \_\_\_\_\_ DATE \_\_\_\_\_

DRAWING NO.  
FIGURE 3-6

REV  
0

D:\CALVERTON\FIRE TRAINING AREA\GROUNDWATER\FINAL\_OUTPUTS\SITE2\_EVS\APR BTEX PLUME - CROSS SECTION 12/19/00 JAL





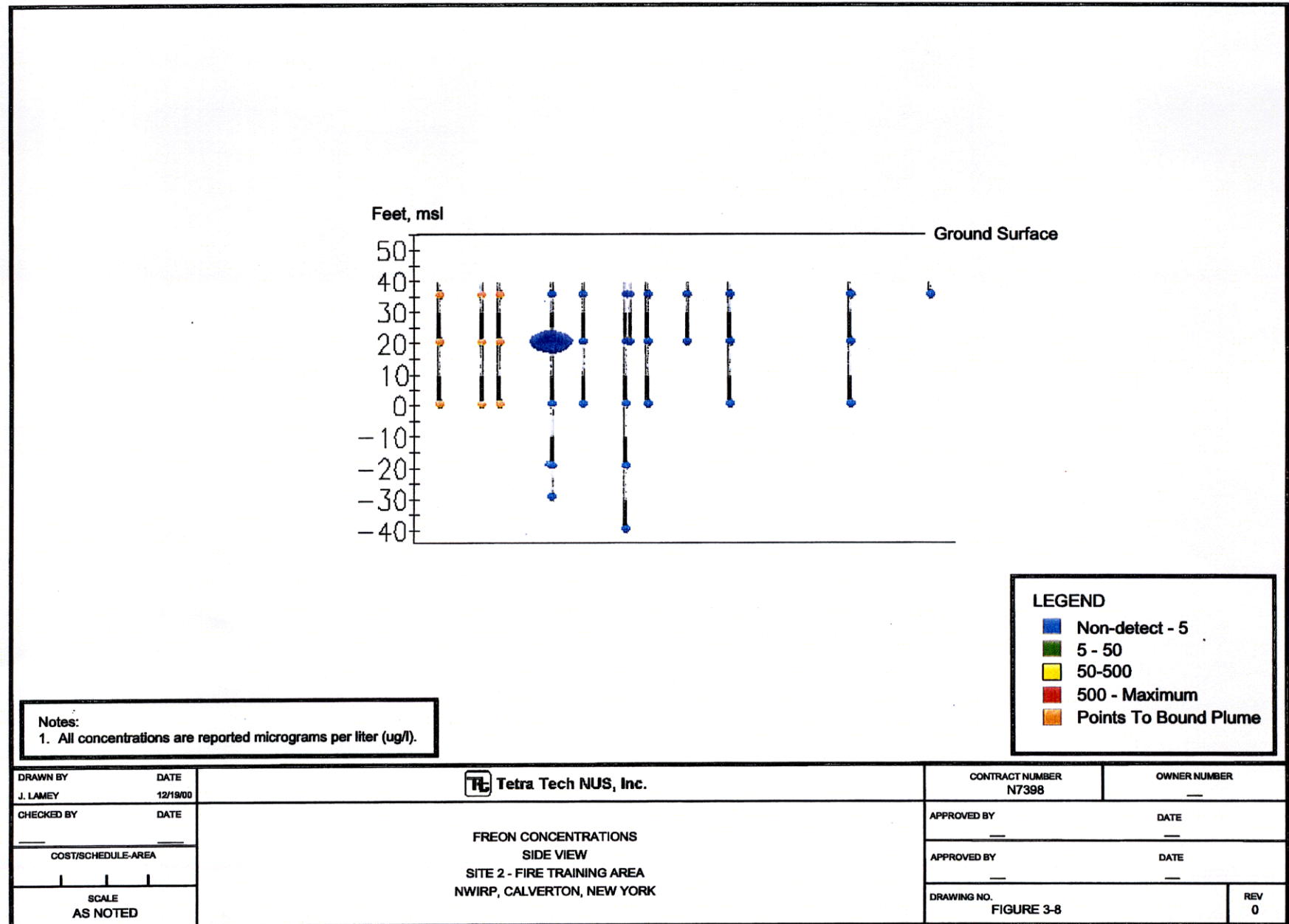
Notes:  
1. All concentrations are reported micrograms per liter (ug/l).

#### LEGEND

- Non-detect - 5
- 5 - 50
- 50-500
- 500 - Maximum
- Points To Bound Plume

DRAWN BY J. LAMEY	DATE 12/19/00	<b>Tetra Tech NUS, Inc.</b>	CONTRACT NUMBER N7398	OWNER NUMBER —
CHECKED BY —	DATE —	<b>FREON CONCENTRATIONS PLAN VIEW SITE 2 - FIRE TRAINING AREA NWIRP, CALVERTON, NEW YORK</b>	APPROVED BY —	
COST/SCHEDULE-AREA —			DATE —	
SCALE AS NOTED			APPROVED BY —	
			DRAWING NO. FIGURE 3-7	
			REV 0	

D:\CALVERTON\FIRE TRAINING AREA\GROUNDWATER\FINAL\_OUTPUTS\SITE2\_EVS\APR FREON PLUME - PLAN 12/19/00 JAL



D:\CALVERTON\FIRE TRAINING AREA\GROUNDWATER\FINAL\_OUTPUTS\SITE2\_EVS\APR FREON PLUME - SIDE 12/19/00 JAL

## **4.0 ECOLOGICAL RISK EVALUATION**

Site 2 lies in an area of disturbed soil and ruderal (weedy) terrestrial vegetation that lacks sensitive ecological receptors capable of being significantly affected in an adverse manner by environmental contamination. There are not wetlands, surface water, or aquatic communities, nor any special status species or unique terrestrial communities located on or adjacent to contaminated areas of Site 2. Because of the lack of sensitive receptors potentially exposed to contamination at this site, no formal ecological risk assessment was performed.

## 5.0 CONCLUSIONS

The following conclusions are based on the results of the RFI and Phase 2 RI at Site 2, Fire Training Area:

- The extent of groundwater contamination at Site 2 is now adequately defined. Based on available data, the groundwater contamination is near the downgradient fence line.
- The groundwater contamination at Site 2 is not continuous. Several pockets of discrete contamination are most likely present.
- Enough data now exists between the RFI and RI to proceed to an FS for Site 2 to evaluate remedial options that will address soil and groundwater contamination.
- The free product plume that was being addressed by Northrop Grumman still exists and is being addressed through a recovery system.

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NYSDEC (New York State Department of Environmental Conservation), 1994. Technical and Administrative Guidance Memorandum Number 4046, Determination of Soil Cleanup Objectives and Cleanup Levels. Albany, New York.

USDOI (U.S. Department of the Interior), 1980. National Wetlands Inventory Maps for Wading River, Riverhead, and Mattituk, New York. Washington, DC.

**APPENDIX A**  
**ANALYTICAL LABORATORY DATA SHEETS**

- A.1          Groundwater from Temporary Wells**
- A.2          Groundwater from Permanent Monitoring Wells**

#### **A.1**

#### **GROUNDWATER FROM TEMPORARY WELLS**

**Note:** Groundwater samples collected from temporary well locations are identified as GW (for groundwater) in the following analytical laboratory data sheets. These sampling locations are identified as TW (for temporary well) in the text, tables, and figures of this report.



# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

By: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:47:41  
Date:

Collected: 03/28/97  
Received : 04/01/97  
Completed: 04/03/97

Sample Taken By  
Client

Reported By: 

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T G W 0 1 1 9  
C O C #1  
Liquid Sample/Sampled 08:23 A.M.  
LIQUID

Sample Number 74279704

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:48:59

Date:

Collected: 03/28/97

Received : 04/01/97

Completed: 04/03/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T G W O 1 3 4  
C O C #1  
Liquid Sample/Sampled 08:51 A.M.  
LIQUID

Sample Number 74289704

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

cc: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:45:30  
Date:

Collected:03/28/97  
Received :04/01/97  
Completed:04/03/97

Sample Taken By  
Client

Reported By: 

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T G W D U O 1 - Duplicate (Duplicate of FTGW0134)  
C O C #1  
Liquid Sample/Sampled 00:00 A.M.  
LIQUID

Sample Number 74269704

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

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\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:17:08  
Date:

Collected: 04/06/97

Received : 04/07/97

Completed: 04/10/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10038

Sample : Brown & Root Environmental  
F T G W O 219  
C O C #7  
Liquid Sample/Sampled 11:28 A.M.  
LIQUID

Sample Number 75499704

Analysis : EPA Method 601/602/

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<2.50	Ethylbenzene	<2.50
1,1-Dichloroethylene	<2.50	Toluene	<2.50
1,1-Dichloroethane	<2.50	Total Xylene	<2.50
Trans-1,2-Dichloroethylene	<2.50	Bromomethane	<2.50
Chloroform	<2.50	Chloromethane	<2.50
1,2-Dichloroethane	<2.50	Trichloro-Fluoromethane	<2.50
1,1,1-Trichloroethane	<2.50	Trichlorotrifluoroethane	<2.50
Carbon Tetrachloride	<2.50	Chloroethane	<2.50
Bromodichloromethane	<2.50		
1,2-Dichloropropane	<2.50		
Cis-Dichloropropylene	<2.50		
Trans-Dichloropropylene	<2.50		
Trichloroethylene	<2.50		
Vinyl Chloride	<2.50		
1,1,2-Trichloroethane	<2.50		
Dibromochloroethane	<2.50		
Bromoform	<2.50		
1,2-Dibromoethane	<2.50		
Tetrachloroethylene	<2.50		
Cis-1,2-Dichloroethylene	<2.50		
Benzene	<2.50		
Chlorobenzene	<2.50		
O-Dichlorobenzene (1,2)	<2.50		
M-Dichlorobenzene (1,3)	<2.50		
P-Dichlorobenzene (1,4)	<2.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:19:02  
Date:

Collected:04/06/97

Received :04/07/97

Completed:04/10/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T G W O 234  
C O C #7  
Liquid Sample/Sampled 11:45 A.M.  
LIQUID

Sample Number 75509704

Analysis : EPA Method 601/602/

Parameters	Results ppb( mmg/l )	Parameters	Results ppb( mmg/l )
Methylene Chloride	<2.50	Ethylbenzene	<2.50
1,1-Dichloroethylene	<2.50	Toluene	<2.50
1,1-Dichloroethane	<2.50	Total Xylene	<2.50
Trans-1,2-Dichloroethylene	<2.50	Bromomethane	<2.50
Chloroform	<2.50	Chloromethane	<2.50
1,2-Dichloroethane	<2.50	Trichloro-Fluoromethane	<2.50
1,1,1-Trichloroethane	<2.50	Trichlorotrifluoroethane	<2.50
Carbon Tetrachloride	<2.50	Chloroethane	<2.50
Bromodichloromethane	<2.50		
1,2-Dichloropropane	<2.50		
Cis-Dichloropropylene	<2.50		
Trans-Dichloropropylene	<2.50		
Trichloroethylene	<2.50		
Vinyl Chloride	<2.50		
1,1,2-Trichloroethane	<2.50		
Dibromochloroethane	<2.50		
Bromoform	<2.50		
1,2-Dibromoethane	<2.50		
Tetrachloroethylene	<2.50		
Cis-1,2-Dichloroethylene	<2.50		
Benzene	<2.50		
Chlorobenzene	<2.50		
O-Dichlorobenzene (1,2)	<2.50		
M-Dichlorobenzene (1,3)	<2.50		
P-Dichlorobenzene (1,4)	<2.50		

## Comments

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:51:15

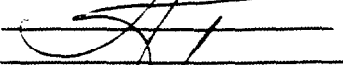
Date:

Collected:08/13/97

Received :08/14/97

Completed:08/18/97

Sample Taken By  
Client

Reported By: 

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
Ft-GW08-45 = FT-GW02-45  
C O C #31  
Liquid Sample/Sampled 9:30 A.M.  
LIQUID

Sample Number 12449708

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	12.88	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	0.74	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	1.18		
Cis-1,2-Dichloroethylene	1.59		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:53:16

Date:

Collected: 08/13/97

Received: 08/14/97

Completed: 08/18/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
Ft-GW08-65 = FT-GW02-45  
C O C #31  
Liquid Sample/Sampled 10:30 A.M.  
LIQUID

Sample Number 12459708

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	2.01	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

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\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:55:17

Date:

Collected:08/13/97

Received :08/14/97

Completed:08/18/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
Ft-Dup-18 Duplicate  
C O C #31  
Liquid Sample/Sampled 00:00  
LIQUID

Sample Number 12469708

Analysis : EPA Method 601/602

Parameters	Results ppb (mmg/l)	Parameters	Results ppb (mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	11.35	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	0.67	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	1.32		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

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\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*



# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:57:56  
Date:

Collected:08/13/97  
Received :08/14/97  
Completed:08/18/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
Ft-GW08-85 = FT-GW02-85  
C O C #31  
Liquid Sample/Sampled 12:00 P.M.  
LIQUID

Sample Number 12479708

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	0.74	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

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\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 13:09:17

Date:

Collected: 04/17/97

Received : 04/18/97

Completed: 04/23/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T G W 0319  
C O C #12  
Liquid Sample/Sampled 3:11 P.M.  
LIQUID

Sample Number 77639704

Analysis : EPA Method 601/602/

Parameters	Results ppb (mmg/l)	Parameters	Results ppb (mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	61.5
1,1-Dichloroethylene	<0.50	Toluene	5.3
1,1-Dichloroethane	<0.50	Total Xylene	27.7
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	17.60		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene	<0.50		

## Comments

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\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

to: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 13:11:30  
Date:

Collected: 04/17/97

Received : 04/18/97

Completed: 04/23/97

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample Taken By  
Client

Sample : Brown & Root Environmental  
F T G W 0334  
C O C #12  
Liquid Sample/Sampled 3:26 P.M.  
LIQUID

Sample Number 77649704

Analysis : EPA Method 601/602/

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	0.8	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	2.5
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	41.20
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	1.20		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene	<0.50		

## Comments

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:04:28

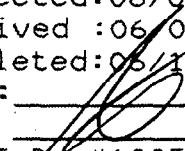
Date:

Collected: 06/06/97

Received : 06/06/97

Completed: 06/10/97

Sample Taken By  
Client

Reported By: 

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T G W 03 48  
C O C #24  
Liquid Sample/Sampled 1:30 P.M.  
LIQUID

Sample Number 85289706

Analysis : EPA Method 601/602

Parameters	Results ppb (mmg/l)	Parameters	Results ppb (mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:05:58

Date:

Collected:06/06/97

Received :06/06/97

Completed:06/10/97

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10658

Sample Taken By  
Client

Sample : Brown & Root Environmental  
F T G W 03 68  
C O C #24  
Liquid Sample/Sampled 2:30 P.M.  
LIQUID

Sample Number 85299706

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	2.5	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50	Dichlorodifluoromethane	2.8
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	0.89		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 14:49:06  
Date:

Collected:06/18/97  
Received :06/18/97  
Completed:06/19/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T -G W 03-78  
C O C #26  
Liquid Sample/Sampled 8:30 A.M.  
LIQUID

Sample Number 86809706

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	30.79	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	0.96	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	1.46		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	13.00		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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# Volumetric Techniques, LTD.

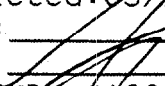
317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:12:22

Date:

Collected: 05/09/97 <sup>or</sup>  
Received : 05/09/97 <sup>or</sup>  
Completed: 05/12/97 <sup>3H</sup>

Reported By: 

N.Y.S. Lab I.D. #10058

Sample Taken By  
Client

Sample : Brown & Root Environmental  
F T G W 04-19  
C O C #16  
Liquid Sample/Sampled 3:55 P.M.  
LIQUID

Sample Number 80769705

Analysis : EPA Method 601/602/

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:14:10

Date:

Collected: 05/09/97

Received : 05/08/97

Completed: 05/12/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
F T G W 04-34  
C O C #16  
Liquid Sample/Sampled 4:10 P.M.  
LIQUID

Sample Number 80779705

Analysis : EPA Method 601/602/

Parameters	Results ppb( mmg/l )	Parameters	Results ppb( mmg/l )
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*



# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

o: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 16:08:28  
Date:

Collected:05/21/97  
Received :05/22/97  
Completed:05/27/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
G C -G W 01- 19  
C O C #21  
Liquid Sample/Sampled 7:30 P.M.  
LIQUID

Sample Number 82719705

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	0.99
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:28:43

Date:

Collected:05/21/97

Received :05/22/97

Completed:05/27/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
G C -G W 01- 34  
C O C #21  
Liquid Sample/Sampled 7:45 P.M.  
LIQUID

Sample Number 82729705

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

J: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:34:13

Date:

Collected:05/21/97

Received :05/22/97

Completed:05/27/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
G C -G W 01- 54  
C O C #21  
Liquid Sample/Sampled 8:00 P.M.  
LIQUID

Sample Number 82739705

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	0.60	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:36:00

Date:

Collected:05/21/97

Received :05/22/97

Completed:05/27/97

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample Taken By  
Client

Sample : Brown & Root Environmental  
G C -G W 02- 19  
C O C #21  
Liquid Sample/Sampled 8:30 P.M.  
LIQUID

Sample Number , 82749705

Analysis : EPA Method 601/602

Parameters	Results ppb (mmg/l)	Parameters	Results ppb (mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	0.82		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

o: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:37:44

Date:

Collected: 05/21/97

Received : 05/22/97

Completed: 05/27/97

Sample Taken By  
Client

Reported By: 

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
G C -G W 02- 34  
C O C #21  
Liquid Sample/Sampled 8:45 P.M.  
LIQUID

Sample Number 82759705

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:39:21  
Date:

Collected:05/21/97  
Received :05/22/97  
Completed:05/27/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
G C -G W 02- 54  
C O C #21  
Liquid Sample/Sampled 9:15 P.M.  
LIQUID

Sample Number 82769705

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

By: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:41:13

Date:

Collected: 05/21/97

Received : 05/22/97

Completed: 05/27/97

Reported By: 

N.Y.S. Lab I.D. #10058

Sample Taken By  
Client

Sample : Brown & Root Environmental  
G C -G W 03- 19  
C O C #21  
Liquid Sample/Sampled 10:20 P.M.  
LIQUID

Sample Number 82779705

Analysis : EPA Method 601/602

Parameters	Results ppb( mmg/l )	Parameters	Results ppb( mmg/l )
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	0.98		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	1.69		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

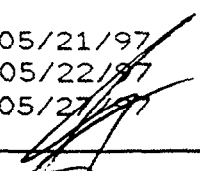
Time Of Login : 09:42:54

Date:

Collected: 05/21/97

Received : 05/22/97

Completed: 05/27/97

Reported By: 

N.Y.S. Lab I.D. #10058

Sample Taken By  
Client

Sample : Brown & Root Environmental  
G C -G W 03- 34  
C O C #21  
Liquid Sample/Sampled 10:45 P.M.  
LIQUID

Sample Number 82789705

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	2.25		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*



# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

By: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 09:45:45  
Date:

Collected:05/21/97  
Received :05/22/97  
Completed:05/27/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_  
N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
G C -G W 03- 54  
C O C #21  
Liquid Sample/Sampled 11:10 P.M.  
LIQUID

Sample Number 82799705

Analysis : EPA Method 601/602

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	2.42		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
1,2-Dibromoethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:49:29

Date:

Collected:06/03/97

Received :06/03/97

Completed:06/04/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10055 \_\_\_\_\_

Sample : Brown & Root Environmental  
G C G W 04-19  
C O C #22  
Liquid Sample/Sampled 11:00 A.M.  
LIQUID

Sample Number 84039706

Analysis : EPA Method 601/602/Freon

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
Tetrachloroethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

\* Indicates less than 1 part per billion or below detection limit.

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\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

By: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:52:38

Date:

Collected:06/03/97

Received :06/03/97

Completed:06/04/97

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample Taken By  
Client

Sample : Brown & Root Environmental  
G C G W 04-34  
C O C #22  
Liquid Sample/Sampled 11:15 A.M.  
LIQUID

Sample Number 84049706

Analysis : EPA Method 601/602/Freon

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluorethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
Tetrachloroethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

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\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

# Volumetric Techniques, LTD.

317 Bernice Drive \* Bayport, New York 11705 \* (516) 472-4848

To: C F Braun, Kelly A. Johnson  
661 Anderson Dr/Foster Plaza 7  
Pittsburgh PA 15220  
(412) 921-7273

Time Of Login : 15:54:37  
Date:

Collected:06/03/97  
Received :06/03/97  
Completed:06/04/97

Sample Taken By  
Client

Reported By: \_\_\_\_\_

N.Y.S. Lab I.D. #10058

Sample : Brown & Root Environmental  
G C G W 04-54  
C O C #22  
Liquid Sample/Sampled 11:45 A.M.  
LIQUID

Sample Number 84059706

Analysis : EPA Method 601/602/Freon

Parameters	Results ppb(mmg/l)	Parameters	Results ppb(mmg/l)
Methylene Chloride	<0.50	Ethylbenzene	<0.50
1,1-Dichloroethylene	<0.50	Toluene	<0.50
1,1-Dichloroethane	<0.50	Total Xylene	<0.50
Trans-1,2-Dichloroethylene	<0.50	Bromomethane	<0.50
Chloroform	<0.50	Chloromethane	<0.50
1,2-Dichloroethane	<0.50	Trichloro-Fluoromethane	<0.50
1,1,1-Trichloroethane	<0.50	Trichlorotrifluoroethane	<0.50
Carbon Tetrachloride	<0.50	Chloroethane	<0.50
Bromodichloromethane	<0.50		
1,2-Dichloropropane	<0.50		
Cis-Dichloropropylene	<0.50		
Trans-Dichloropropylene	<0.50		
Trichloroethylene	<0.50		
Vinyl Chloride	<0.50		
1,1,2-Trichloroethane	<0.50		
Dibromochloroethane	<0.50		
Bromoform	<0.50		
Tetrachloroethane	<0.50		
Tetrachloroethylene	<0.50		
Cis-1,2-Dichloroethylene	<0.50		
Benzene	<0.50		
Chlorobenzene	<0.50		
O-Dichlorobenzene (1,2)	<0.50		
M-Dichlorobenzene (1,3)	<0.50		
P-Dichlorobenzene (1,4)	<0.50		

## Comments

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\* CONSULTING CHEMISTS \* COMPLETE LABORATORY TESTING \*  
\* Sander R. Sternig \* Director of Laboratories \*

**A.2**

**GROUNDWATER FROM PERMANENT MONITORING WELLS**

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 022

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADG6101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW02S-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	250	
71-43-2	Benzene	20	U
75-27-4	Bromodichloromethane	20	U
75-25-2	Bromoform	20	U
74-83-9	Bromomethane	20	U
78-93-3	2-Butanone	69	
75-15-0	Carbon disulfide	20	U
56-23-5	Carbon tetrachloride	20	U
108-90-7	Chlorobenzene	20	U
124-48-1	Dibromochloromethane	20	U
75-00-3	Chloroethane	20	U
67-66-3	Chloroform	20	U
74-87-3	Chloromethane	20	U
75-34-3	1,1-Dichloroethane	58	
107-06-2	1,2-Dichloroethane	20	U
75-35-4	1,1-Dichloroethene	20	U
540-59-0	1,2-Dichloroethene (total)	78	
78-87-5	1,2-Dichloropropane	20	U
10061-01-5	cis-1,3-Dichloropropene	20	U
10061-02-6	trans-1,3-Dichloropropene	20	U
100-41-4	Ethylbenzene	8.7	J
591-78-6	2-Hexanone	20	U
75-09-2	Methylene chloride	20	U
108-10-1	4-Methyl-2-pentanone	14	J
100-42-5	Styrene	20	U
79-34-5	1,1,2,2-Tetrachloroethane	20	U
127-18-4	Tetrachloroethene	3.7	J
108-88-3	Toluene	63	
71-55-6	1,1,1-Trichloroethane	2.8	J

0055

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 022

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADG6101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW02S-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
79-00-5	1,1,2-Trichloroethane	20	U
79-01-6	Trichloroethene	19	J
75-01-4	Vinyl chloride	20	U
1330-20-7	Xylenes (total)	91	

0056

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 022

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADG6101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW02S-062597

(ug/L or ug/kg) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
75-18-3	dimethyl sulfide	6.02	32	J
0-00-0	unknown alkane	19.23	30	J
0-00-0	unknown TRIMETHYLBENZENE	20.6	62	J
0-00-0	unknown trimethylbenzene	21.23	68	J
0-00-0	unknown trimethylbenzene	21.98	44	J
0-00-0	unknown alkane	22.08	44	J
0-00-0	unknown alkane	22.2	32	J
0-00-0	unknown ketone	22.35	54	J
0-00-0	unknown	22.53	52	J
0-00-0	unknown	23.23	70	J

0057



## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name: QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID: C7F270122 015

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFW101

Date Extracted: 07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW05-S-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U
71-55-6	1,1,1-Trichloroethane	10	U

0034

BROWN & ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 015

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFW101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW05-S-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0035

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 015

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFW101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW05-S-062597

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	no tics detected			ND

0036

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 004

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJJ101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW05-S

## CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/kg)	ug/L	Q
67-64-1	Acetone	10		U
71-43-2	Benzene	10		U
75-27-4	Bromodichloromethane	10		U
75-25-2	Bromoform	10		U
74-83-9	Bromomethane	10		U
78-93-3	2-Butanone	10		U
75-15-0	Carbon disulfide	10		U
56-23-5	Carbon tetrachloride	10		U
108-90-7	Chlorobenzene	10		U
124-48-1	Dibromochloromethane	10		U
75-00-3	Chloroethane	10		U
67-66-3	Chloroform	10		U
74-87-3	Chloromethane	10		U
75-34-3	1,1-Dichloroethane	10		U
107-06-2	1,2-Dichloroethane	10		U
75-35-4	1,1-Dichloroethene	10		U
540-59-0	1,2-Dichloroethene (total)	10		U
78-87-5	1,2-Dichloropropane	10		U
10061-01-5	cis-1,3-Dichloropropene	10		U
10061-02-6	trans-1,3-Dichloropropene	10		U
100-41-4	Ethylbenzene	10		U
591-78-6	2-Hexanone	10		U
75-09-2	Methylene chloride	10		U
108-10-1	4-Methyl-2-pentanone	10		U
100-42-5	Styrene	10		U
79-34-5	1,1,2,2-Tetrachloroethane	10		U
127-18-4	Tetrachloroethene	10		U
108-88-3	Toluene	10		U

0012

BROWN & ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 004

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJJ101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW05-S

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
71-55-6	1,1,1-Trichloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0013

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 004

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJJ101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW05-S

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
NO TICS DETECTED				ND

0014

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 014

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFV101

Date Extracted:07/01/97

Dilution factor: 1

Date Analyzed: 07/01/97

Moisture %:NA

QC Batch: 7183134

Client Sample Id: FT-MW05-I-062597

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	1.2	J
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U
71-55-6	1,1,1-Trichloroethane	1.0	J

0031

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 014

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFV101

Date Extracted:07/01/97

Dilution factor: 1

Date Analyzed: 07/01/97

Moisture %:NA

QC Batch: 7183134

Client Sample Id: FT-MW05-I-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0032



BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 014

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFV101

Date Extracted:07/01/97

Dilution factor: 1

Date Analyzed: 07/01/97

Moisture %:NA

QC Batch: 7183134

Client Sample Id: FT-MW05-I-062597

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1066-40-6	silanol, trimethyl	6.92	11	J

0033

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 005

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0HC101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW05-I

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U

0029

BROWN & ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 005

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0HCl01

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW05-I

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
71-55-6	1,1,1-Trichloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0030

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 005

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0HC101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW05-I

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
NO TICS DETECTED				ND

0031

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 012

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFR101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW06-S-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U
71-55-6	1,1,1-Trichloroethane	10	U

0025

BROWN & ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 012

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFR101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW06-S-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L Q
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0026

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 012

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFR101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW06-S-062597

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	no tics detected			ND

0027

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 002

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0H7101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW06-S

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/kg)	ug/L	
67-64-1	Acetone	10		U
71-43-2	Benzene	10		U
75-27-4	Bromodichloromethane	10		U
75-25-2	Bromoform	10		U
74-83-9	Bromomethane	10		U
78-93-3	2-Butanone	10		U
75-15-0	Carbon disulfide	10		U
56-23-5	Carbon tetrachloride	10		U
108-90-7	Chlorobenzene	10		U
124-48-1	Dibromochloromethane	10		U
75-00-3	Chloroethane	10		U
67-66-3	Chloroform	10		U
74-87-3	Chloromethane	10		U
75-34-3	1,1-Dichloroethane	10		U
107-06-2	1,2-Dichloroethane	10		U
75-35-4	1,1-Dichloroethene	10		U
540-59-0	1,2-Dichloroethene (total)	10		U
78-87-5	1,2-Dichloropropane	10		U
10061-01-5	cis-1,3-Dichloropropene	10		U
10061-02-6	trans-1,3-Dichloropropene	10		U
100-41-4	Ethylbenzene	10		U
591-78-6	2-Hexanone	10		U
75-09-2	Methylene chloride	10		U
108-10-1	4-Methyl-2-pentanone	10		U
100-42-5	Styrene	10		U
79-34-5	1,1,2,2-Tetrachloroethane	10		U
127-18-4	Tetrachloroethene	10		U
108-88-3	Toluene	10		U

0020



## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 002

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0H7101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW06-S

CONCENTRATION UNITS:			
CAS NO.	COMPOUND	(ug/L or ug/kg) ug/L	Q
71-55-6	1,1,1-Trichloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0021

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 002

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CEOH7101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW06-S

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	NO TICS DETECTED			ND

0022

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 011

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFQ101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW06-I-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	1.4	J
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U
71-55-6	1,1,1-Trichloroethane	10	U

0020

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 011

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFQ101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW06-I-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0021

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 011

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFQ101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW06-I-062597

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	no tics detected			ND

0022

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 004

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0HA101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW06-I

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U

0026

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 004

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0HA101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW06-I

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) ug/L	Q
71-55-6	1,1,1-Trichloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0027

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 004

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CEOHA101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW06-I

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	NO TICS DETECTED			ND

0028



## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 013

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFT101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-DUP02-W

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	1.4	J
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U
71-55-6	1,1,1-Trichloroethane	10	U

0028

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 013

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFT101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-DUP02-W

CONCENTRATION UNITS:			
CAS NO.	COMPOUND	(ug/L or ug/kg) ug/L	Q
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0029

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 013

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFT101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-DUP02-W

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	no tics detected			ND

0030

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 003

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CEOH9101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW07

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U

0023

BROWN & ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 003

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0H9101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW07

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
71-55-6	1,1,1-Trichloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0024

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K120115 003

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/12/97

Work Order: CE0H9101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW07

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	NO TICS DETECTED			ND

0025

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 016

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFX101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW08-S-062597

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	10	U
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	10	U
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U
71-55-6	1,1,1-Trichloroethane	10	U

0037

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 016

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFX101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW08-S-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0038



BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 016

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADFX101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW08-S-062597

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	no tics detected			ND

0039

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 002

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJF101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW08-S

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/kg)	ug/L	
67-64-1	Acetone	10		U
71-43-2	Benzene	10		U
75-27-4	Bromodichloromethane	10		U
75-25-2	Bromoform	10		U
74-83-9	Bromomethane	10		U
78-93-3	2-Butanone	10		U
75-15-0	Carbon disulfide	10		U
56-23-5	Carbon tetrachloride	10		U
108-90-7	Chlorobenzene	10		U
124-48-1	Dibromochloromethane	10		U
75-00-3	Chloroethane	10		U
67-66-3	Chloroform	10		U
74-87-3	Chloromethane	10		U
75-34-3	1,1-Dichloroethane	10		U
107-06-2	1,2-Dichloroethane	10		U
75-35-4	1,1-Dichloroethene	10		U
540-59-0	1,2-Dichloroethene (total)	10		U
78-87-5	1,2-Dichloropropane	10		U
10061-01-5	cis-1,3-Dichloropropene	10		U
10061-02-6	trans-1,3-Dichloropropene	10		U
100-41-4	Ethylbenzene	10		U
591-78-6	2-Hexanone	10		U
75-09-2	Methylene chloride	10		U
108-10-1	4-Methyl-2-pentanone	10		U
100-42-5	Styrene	10		U
79-34-5	1,1,2,2-Tetrachloroethane	10		U
127-18-4	Tetrachloroethene	10		U
108-88-3	Toluene	10		U

0006

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 002

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJF101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW08-S

CONCENTRATION UNITS:			
CAS NO.	COMPOUND	(ug/L or ug/kg) ug/L	Q
71-55-6	1,1,1-Trichloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	10	U

0007

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 002

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJF101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW08-S

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
95-36-3	1,2,4-TRIMETHYLBENZENE OR IS	21.25	7.1	J
95-36-3	1,2,4-TRIMETHYLBENZENE OR IS	21.98	6.1	J

0008

## BROWN. &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 017

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADG0101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW08-I-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg)	ug/L
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	91	
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	110	
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	5.2	J
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	2.0	J
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U
71-55-6	1,1,1-Trichloroethane	13	

CC40

BROWN & ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 017

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADG0101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW08-I-062597

CAS NO.	COMPOUND	CONCENTRATION UNITS:	
		(ug/L or ug/kg) ug/L	Q
79-00-5	1,1,2-Trichloroethane	10	U
79-01-6	Trichloroethene	10	U
75-01-4	Vinyl chloride	10	U
1330-20-7	Xylenes (total)	13	

0041

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR323

Matrix: (soil/water) WATER

Lab Sample ID:C7F270122 017

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 06/27/97

Work Order: CADG0101

Date Extracted:07/01/97

Date Analyzed: 07/01/97

QC Batch: 7183134

Client Sample Id: FT-MW08-I-062597

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
0-00-0	unknown trimethylbenzene	21.26	10	J
0-00-0	unknown trimethylbenzene	22	16	J

0042

## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 003

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJH101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW08-I

		CONCENTRATION UNITS:	
CAS NO.	COMPOUND	(ug/L or ug/kg) ug/L	Q
67-64-1	Acetone	10	U
71-43-2	Benzene	10	U
75-27-4	Bromodichloromethane	10	U
75-25-2	Bromoform	10	U
74-83-9	Bromomethane	10	U
78-93-3	2-Butanone	10	U
75-15-0	Carbon disulfide	10	U
56-23-5	Carbon tetrachloride	10	U
108-90-7	Chlorobenzene	10	U
124-48-1	Dibromochloromethane	10	U
75-00-3	Chloroethane	30	
67-66-3	Chloroform	10	U
74-87-3	Chloromethane	10	U
75-34-3	1,1-Dichloroethane	55	
107-06-2	1,2-Dichloroethane	10	U
75-35-4	1,1-Dichloroethene	10	U
540-59-0	1,2-Dichloroethene (total)	3.7	J
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
100-41-4	Ethylbenzene	10	U
591-78-6	2-Hexanone	10	U
75-09-2	Methylene chloride	10	U
108-10-1	4-Methyl-2-pentanone	10	U
100-42-5	Styrene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
127-18-4	Tetrachloroethene	10	U
108-88-3	Toluene	10	U

0009



## BROWN &amp; ROOT ENVIRONMENTAL

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 003

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJH101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW08-I

CAS NO.	COMPOUND	CONCENTRATION UNITS:		Q
		(ug/L or ug/kg)	ug/L	
71-55-6	1,1,1-Trichloroethane	3.8		J
79-00-5	1,1,2-Trichloroethane	10		U
79-01-6	Trichloroethene	10		U
75-01-4	Vinyl chloride	10		U
1330-20-7	Xylenes (total)	10		U

0010

BROWN & ROOT ENVIRONMENTAL  
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name:QUANTERRA

SDG Number: BR344

Matrix: (soil/water) WATER

Lab Sample ID:C7K110109 003

Method: OCLP OLM03.1

Volatile Organics, GC/MS (CLP -OLM03.1)

Sample WT/Vol: 5 / mL

Date Received: 11/11/97

Work Order: CDXJH101

Date Extracted:11/14/97

Dilution factor: 1

Date Analyzed: 11/14/97

Moisture %:NA

QC Batch: 7318125

Client Sample Id: FT-MW08-I

(ug/L or ug/kg) ug/L				
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
NO TICS DETECTED				ND

0011

**APPENDIX B**  
**SAMPLE LOG SHEETS**









Project Site Name: <u>NWIRP - Calverton</u>		Sample ID No.: <u>FT-MWOS-I</u>
Project No.: <u>7398</u>		Sample Location: <u>Fish Training Area</u>
<input type="checkbox"/> Domestic Well Data		Sampled By: <u>P. Davis / S. Petrick</u>
<input checked="" type="checkbox"/> Monitoring Well Data		C.O.C. No.: <u># 2</u>
<input type="checkbox"/> Other Well Type:		Type of Sample:
<input type="checkbox"/> QA Sample Type:		<input checked="" type="checkbox"/> Low Concentration <input type="checkbox"/> High Concentration

  
**SAMPLING DATA:**

Date:	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	Other NA
<u>11/11/97</u>								
Time: <u>1205</u>								
Method: <u>Disp. Bailor</u>	<u>Clear</u>	<u>5.40</u>	<u>0.051</u>	<u>11.6</u>	<u>0</u>	<u>7.27</u>	<u>0.00</u>	

  
**PURGE DATA:**

Date:	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
<u>11/11/97</u>								
Method: <u>Sub Pump</u>	Initial	<u>5.63</u>	<u>0.057</u>	<u>12.6</u>	<u>200</u>	<u>11.56</u>	<u>0.00</u>	
Monitor Reading (ppm):	1	<u>5.43</u>	<u>0.051</u>	<u>11.7</u>	<u>0</u>	<u>7.21</u>	<u>0.00</u>	
Well Casing Diameter & Material	2	<u>5.40</u>	<u>0.051</u>	<u>11.8</u>	<u>0</u>	<u>7.22</u>	<u>0.00</u>	
Type: <u>PVC - 4"</u>	3	<u>5.40</u>	<u>0.051</u>	<u>11.6</u>	<u>0</u>	<u>7.27</u>	<u>0.00</u>	
Total Well Depth (TD): <u>60.18</u>								
Static Water Level (WL): <u>12.79</u>								
One Casing Volume (gal): <u>31</u>								
Start Purge (hrs): <u>1120</u>								
End Purge (hrs): <u>1200</u>								
Total Purge Time (min): <u>40</u>								
Total Vol. Purged (gal): <u>100</u>								

  
**SAMPLE COLLECTION INFORMATION:**

Analysis	Preservative	Container Requirements	Collected
<u>TCL VOC</u>	<u>HCL</u>	<u>(2) 40 ml Vials</u>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

  
**OBSERVATIONS / NOTES:**

Place pump 18' btoC

pump flow: 2.5 GPM

collect sample at 55' btoC

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.: <u>- Dup-01</u>	<u>Paul M. Davis</u>





<b>Project Site Name:</b>		<u>NWIRP-Calverton</u>	<b>Sample ID No.:</b>		<u>FT-MW06-S</u>
<b>Project No.:</b>		<u>739B</u>	<b>Sample Location:</b>		<u>Fire Training Area</u>
			<b>Sampled By:</b>		<u>P.Davis/S.Patke as</u>
<input type="checkbox"/> Domestic Well Data			<b>C.O.C. No.:</b>		<u># 2</u>
<input checked="" type="checkbox"/> Monitoring Well Data			<b>Type of Sample:</b>		
<input type="checkbox"/> Other Well Type:			<input checked="" type="checkbox"/> Low Concentration		
<input type="checkbox"/> QA Sample Type:			<input type="checkbox"/> High Concentration		

  
**SAMPLING DATA:**

Date:	Color Visual	pH Standard	S.C. mS/cm	Temp. Degrees C	Turbidity NTU	DO mg/l	Salinity %	Other NA
<u>11/11/97</u>								
<u>Time: 0900</u>								
<u>Method: disposable bailer</u>	Rusty	4.99	0.051	10.8	63	10.91	0.00	

  
**PURGE DATA:**

Date:	Volume	pH	S.C.	Temp. (C)	Turbidity	DO	Salinity	Other
<u>11/11/97</u>								
<u>Method: hand bailer</u>	Initial	4.22	0.055	8.3	61	12.10	0.00	
<u>Monitor Reading (ppm): -</u>	1	4.74	0.055	10.4	61	10.80	0.00	
<u>Well Casing Diameter &amp; Material</u>	2	4.85	0.052	10.7	62	10.93	0.00	
<u>Type: 4" PVC</u>	3	4.99	0.052	10.8	63	10.91	0.00	
<u>Total Well Depth (TD): 29.00</u>								
<u>Static Water Level (WL): 21.99</u>								
<u>One Casing Volume(gal/L): 27.00 gal</u>								
<u>Start Purge (hrs): 0750</u>								
<u>End Purge (hrs): 0845</u>								
<u>Total Purge Time (min): 55</u>								
<u>Total Vol. Purged (gal/L): 14</u>								

  
**SAMPLE COLLECTION INFORMATION:**

Analysis	Preservative	Container Requirements	Collected
<u>TCL VOC</u>	<u>HCl</u>	<u>2-40ml VOA vials</u>	<input checked="" type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>
			<input type="checkbox"/>

  
**OBSERVATIONS / NOTES:**

Sample collected approximately 24' below TOC

<b>Circle if Applicable:</b>		<b>Signature(s):</b>  <u>[Signatures]</u>
<input type="checkbox"/> MS/MSD	Duplicate ID No.: _____	











*E. L. Linn*





**APPENDIX C**  
**CHAIN OF CUSTODY FORMS**

0001

**Order No. 70440 (0693)**

COC # 7

Order No. 70440 (L

COC # 12

**Order No. 70440 (0693)**

# CHAIN OF CUSTODY RECORD

COL # 16

PROJECT NO.: 7398		SITE NAME: NUTRIENT CONVERSION				NO. OF CONTAINERS	40 ML VOA VOCs									REMARKS
SAMPLERS (SIGNATURE): Jeresa Kuwera																
STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION											
	5/8	0900		X	NB-T013	2	2									TEIP BUNK
	5/8	1555		X	FT-GW04-19	2	2									
	5/8	1610		X	FT-GW04-34	2	2									
	5/9	1010		X	ET-GW12-11	2	2									
	5/9	1030		X	ET-GW12-26	2	2									
	5/9	1120		X	ET-GW13-11	2	2									
	5/9	1140		X	ET-GW13-26	2	2									
	5/9	1210		X	ET-GW14-11	2	2									
	5/9	1230		X	ET-GW14-26	2	2									
	5/9	1000		X	ET DUPOG	2	2									DUPLICATE
RELINQUISHED BY (SIGNATURE): Jeresa Kuwera		DATE / TIME: 5/9/97 1400		RECEIVED BY (SIGNATURE):		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):						
RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):						
RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED FOR LABORATORY BY (SIGNATURE):		DATE / TIME:		REMARKS: Lab Pick-up								

## CHAIN C CUSTODY RECORD

COC # 21

PAGE 1 OF 2

PROJECT NO.: 7398		SITE NAME: NWIRP- Colverton				NO. OF CON- TAINERS	40 ML VIAL VOC'S							REMARKS
SAMPLERS (SIGNATURE): Jeresa Acunzi														
STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION									
	5/21	1300		X	FL-TB17	2	2						TRIP BLANK	
	5/21	1400		X	FL-GW01-19	2	2							
	5/21	1430		X	FL-GW01-34	2	2							
	5/21	1600		X	FL-DUP - 09	2	2						DUPLICATE	
	5/21	1515		X	FL-GW02-19	2	2							
	5/21	1545		X	FL-GW02-34	2	2							
	5/21	1930		X	GC-GW01-19	2	2							
	5/21	1945		X	GC-GW01-34	2	2							
	5/21	2000		X	GC-GW01-54	2	2							
	5/21	2030		X	GC-GW02-19	2	2							
	5/21	2015		X	GC-GW02-34	2	2							
	5/21	2115		X	GC-GW02-54	2	2							
	5/21	2220		X	GC-GW03-19	2	2							
	5/21	2245		X	GC-GW03-34	2	2							

RELINQUISHED BY (SIGNATURE): Jeresa Acunzi	DATE / TIME: 5/22/19 1530	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: LAB PICK-UP	

# CHAIN OF CUSTODY RECORD

LOC # 21

PAGE 2 OF 2

PROJECT NO.: 7398		SITE NAME: NWIRP - Colverton				NO. OF CONTAINERS	40 ml VIAL VOC'S						REMARKS
SAMPLERS (SIGNATURE): Jeresa Acosta													
STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION								
	5/21	2310		X	GC - GW03 - 54	2	2						
	5/22	0000		X	IF - DUP 10	2	2					Duplicate	
	5/22	0920		Y	TF - GW17 - 19	2	2					VOC'S + FREON	
	5/22	0940		X	TF - GW17 - 34	2	2					↓	
	5/22	1010		X	IF - GW17 - 54	2	2					↓	
	5/22	1000		X	IF - DUP 11	2	2					Duplicate STET (TS)	
	5/22	1210		X	FL - GW01 - 19	2	2						
	5/22	1230		X	FL - GW04 - 34	2	2						
	5/22	1315		X	FL - GW05 - 19	2	2						
	5/22	1335		X	FL - GW05 - 34	2	2						
	5/22	1400		X	FL - GW06 - 19	2	2						
	5/22	1430		X	FL - GW06 - 34	2	2						
	5/22	0000		X	FL - DUP 12	2	2					Duplicate STET (TS)	
	5/22	0000		X	FL - DUP 13	2	2					Duplicate	

RELINQUISHED BY (SIGNATURE): Jeresa Acosta	DATE / TIME: 5/22/97 1530	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS: LAB PICK UP	



COC #24

**Order No. 70440 (0693)**

DOC # 26

Order # 0 (0693)

# CHAIN OF CUSTODY RECORD

COC # 03W

PROJECT NO.: 1398		SITE NAME: NWIRP-Calverton		NO. OF CONTAINERS		40 ME VIAL 1 VIAL 1 LITR 3 VIALS										REMARKS	
SAMPLERS (SIGNATURE): <i>Teresa Sturgeon</i>																	
STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION												
	6/25	0700		X	FT-TB-03W	2	2										TRIP BLANK
	6/25	0950		X	FT-MW06-I-062597	2	2										
	6/25	1020		X	FT-MW06-S-062597	2	2										
	6/25	1100		X	FT-DUP02-W	2	2										
	6/25	1115		X	FT-MW05-I-062597	2	2										
	6/25	1130		X	FT-MW05-S-062597	2	2										
	6/25	1200		X	FT-MW08-S-062597	2	2										
	6/25	1240		X	FT-MW08-I-062597	2	2										
	6/25	1445		X	PR-GW01-02	2	2										
	6/25	1500		X	PR-GW02-02	4	2	2									
	6/25	1430		X	FD-MW07-062597	2	2										
	6/25	1530		X	PR-GW03-03	2	2										
	6/25	1800		X	FT-MW025-062597	2	2										
RELINQUISHED BY (SIGNATURE): <i>Teresa Sturgeon</i>		DATE / TIME: 6/26/2000		RECEIVED BY (SIGNATURE):		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):	
RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):	
RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED FOR LABORATORY BY (SIGNATURE):		DATE / TIME:		REMARKS: Shipped FedEx 6/26/2000 # 429.7.10101									

COC # 056)

[illegible]

## CHAIN OF CUSTODY RECORD

COC # 31

PROJECT NO.: 7398		SITE NAME: NWIRP Calverton		NO. OF CONTAINERS		REMARKS						
SAMPLERS (SIGNATURE): Jeresa Sawyer												
STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION							
	8/12	0720		X	FT-TB-29	2	2					TRIP BLANK
	8/13	1930		X	FT-GW08-45	2	2					
	8/13	1030		X	FT-GW08-65	2	2					
	8/13	0000		X	FT-DUP-18	2	2					Duplicate
	8/13	1200		X	FT-GW08-85	2	2					
	8/14	1940		X	SA-GW106-12	2	2					
	8/14	1045		X	SA-GW106-27	2	2					
	8/14	1200		X	SA-GW106-47	2	2					
	8/14	1300		X	SA-GW106-67	2	2					
	8/14	0000		X	SA-DUP-19	2	2					
RELINQUISHED BY (SIGNATURE): Jeresa Sawyer		DATE / TIME: 8/14/97 1400		RECEIVED BY (SIGNATURE): Lab		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):		
RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):		RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED BY (SIGNATURE):		
RELINQUISHED BY (SIGNATURE):		DATE / TIME:		RECEIVED FOR LABORATORY BY (SIGNATURE):		DATE / TIME:		REMARKS: Lab Pick-up				

Project Manager: Det. Brynack  
**CHAIN OF CUSTODY RECORD**

# 1 of 5

Brown & deat E. 10.

[illegible]

10-14 Red

[illegible]

**APPENDIX D**  
**MONITORING WELL CONSTRUCTION SHEETS**





# OVERBURDEN MONITORING WELL SHEET

PROJECT NWIRP-Gilberton LOCATION Gilberton, NY DRILLER M. Mueller  
PROJECT NO. 7398 BORING FT-MOCE DRILLING  
ELEVATION \_\_\_\_\_ DATE 6/7/97 METHOD HSA  
FIELD GEOLOGIST TERESA SAWYER DEVELOPMENT  
METHOD \_\_\_\_\_

GROUND ELEVATION		
	ELEVATION OF TOP OF SURFACE CASING :	_____
	ELEVATION OF TOP OF RISER PIPE:	_____
	STICK - UP TOP OF SURFACE CASING:	_____
	STICK - UP RISER PIPE :	_____
	TYPE OF SURFACE SEAL: <u>concrete</u>	_____
	I.D. OF SURFACE CASING: <u>8"</u>	_____
	TYPE OF SURFACE CASING: <u>STEEL</u>	_____
	RISER PIPE I.D. <u>4"</u>	_____
	TYPE OF RISER PIPE: <u>Schedule 40 PVC</u>	_____
	BOREHOLE DIAMETER: <u>10.25</u>	_____
	TYPE OF BACKFILL: <u>Concrete</u>	_____
	ELEVATION / DEPTH TOP OF SEAL: <u>12'</u>	_____
	TYPE OF SEAL: <u>Bentonite Pellets</u>	_____
	DEPTH TOP OF SAND PACK: <u>3'</u>	_____
	ELEVATION / DEPTH TOP OF SCREEN: <u>14'</u>	_____
	TYPE OF SCREEN: <u>Schedule 40 PVC</u>	_____
	SLOT SIZE x LENGTH: <u>0.020 10'</u>	_____
	I.D. OF SCREEN: <u>4"</u>	_____
	TYPE OF SAND PACK: <u>#1 FILTER SAND</u>	_____
	ELEVATION / DEPTH BOTTOM OF SCREEN: <u>114</u>	_____
	ELEVATION / DEPTH BOTTOM OF SAND PACK: <u>116</u>	_____
	TYPE OF BACKFILL BELOW OBSERVATION WELL: <u>#1 FILTER SAND</u>	_____
	ELEVATION / DEPTH OF HOLE: <u>116</u>	_____



BORING NO.: FT-MW08-I

# OVERBURDEN MONITORING WELL SHEET

PROJECT KWIP - ColvertonPROJECT NO. 7398

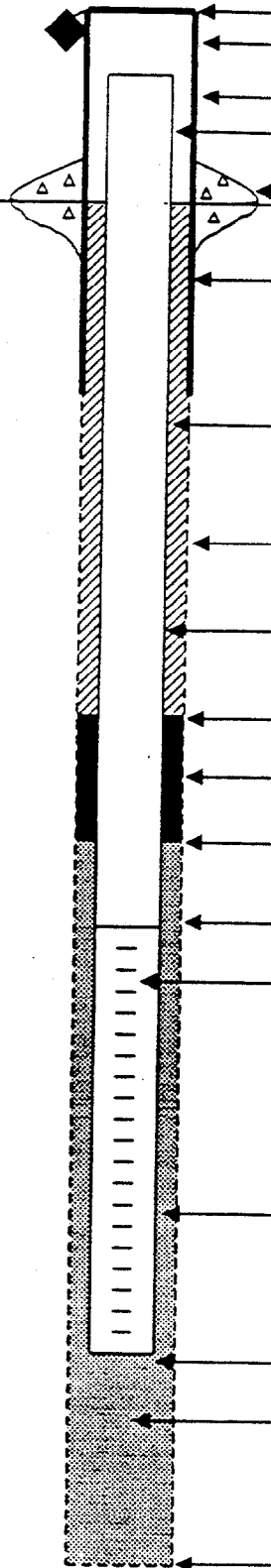
ELEVATION \_\_\_\_\_

FIELD GEOLOGIST Teresa SawyerLOCATION Colverton, NYBORING FT-MW08-IDATE 6/21/97DRILLER M. Mueller

DRILLING

METHOD MEG

DEVELOPMENT

METHOD Pump + SurgeGROUND  
ELEVATION

ELEVATION OF TOP OF SURFACE CASING: \_\_\_\_\_

ELEVATION OF TOP OF RISER PIPE: \_\_\_\_\_

STICK - UP TOP OF SURFACE CASING: \_\_\_\_\_

STICK - UP RISER PIPE: 2.5TYPE OF SURFACE SEAL: ConcreteI.D. OF SURFACE CASING: 6"TYPE OF SURFACE CASING: STEELRISER PIPE I.D. 4"TYPE OF RISER PIPE: Schedule 40 PVCBOREHOLE DIAMETER: 10.25"TYPE OF BACKFILL: bentonite / cement  
groutELEVATION / DEPTH TOP OF SEAL: 119TYPE OF SEAL: 1/4" bentonite pelletDEPTH TOP OF SAND PACK: 21ELEVATION / DEPTH TOP OF SCREEN: 123TYPE OF SCREEN: ~~slotted~~ Schedule 40 PVCSLOT SIZE x LENGTH: 0.020 10'I.D. OF SCREEN: 4"TYPE OF SAND PACK: # FILTER SANDELEVATION / DEPTH BOTTOM OF SCREEN: 133ELEVATION / DEPTH BOTTOM OF SAND PACK: 135TYPE OF BACKFILL BELOW OBSERVATION  
WELL: 1# FILTER SANDELEVATION / DEPTH OF HOLE: 135

